FROM *NEW YORK TIMES* BEST-SELLING AUTHOR TIM MACWELCH

OUTDOOR LIFE THE ULTIMATE SELF-SUFFICIENCY MANUAL

GROW

BUILD

FARM

SURVIVE

OUTDOOR LIFE

THE ULTIMATE SELF-SUFFICIENCY MANUAL

OUTDOOR LIFE
THE ULTIMATE
SELF-SUFFICIENCY
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INTRODUCTION

THE SPIRIT OF SELF-SUFFICIENCY

In our convenience-obsessed society, we've reached a point where every possible service and product can be secured without even leaving our homes—that is, if we have the funds to pay for it. Meals that others have prepared can be delivered in minutes, and repairs can be made on any failing appliance or system by people who know things we don't. Just about anything we want can be handed to us by somebody else. With all this convenience, you might wonder why anyone would ever want to shun the modern world and "go off the grid" by choice. Nevertheless, people are leaving this push-button life of consumption, and they are leaving it in their droves. While some turn their backs on accessibility and modern comforts in the search for a more meaningful life, others choose a DIY lifestyle to "go green" for sustainability. The drive to live a life unplugged and embrace self-sufficiency can be a matter of pride, honor, or stewardship of the land. These motivations are often very different from the wants and perceived needs of modern people, just as this book is very different from your typical survival book. Rather than shocking people with extreme survival and hardcore skills, this book is intended to be a day-to-day guidebook for anyone with an independent spirit and the desire to handle their own problems and challenges. And once you've learned to provide for yourself, you may even find that you have the means to help others through tough times. If you want to become more resilient in emergencies and more capable as a person, keep reading!

Tim MacWelch

PART ONE

GETTING STARTED

PART ONE

BUILD YOUR SKILLS

At different points in our lives, we've all felt the drive to strike out on our own. Some of us want to test our mettle and discover our real strengths, proving our worth to both ourselves and others. For others, the hunger for independence manifests itself as a desire to lead a more meaningful and purposeful life, not just a life of consuming and wasting. We're all individuals, and very different people, with diverse motivations. But when we feel the urge to become more self-sufficient, we are all experiencing that same ancestral calling. We don't want to rely on others for every little thing in our lives. We want to be able to take care of ourselves and our loved ones, under our own power and by our own means. This is the allure of self-reliance. It's the desire to supply our own needs with as little external assistance as possible. It's the way that many of our ancestors lived, and while it's a lot of hard work, it's also a path full of unexpected rewards.

Synonymous with self-sustaining, independent, and self-reliant, the idea of being self-sufficient can be approached in many different ways. We may choose to go full speed ahead, buying land and building a homestead from scratch. We may also choose a more cautious approach, slowly building our assets and learning selected skills that are practical in both urban and rural lifestyles. Whichever path we choose, the first part of this book is all about the basics. The information presented here is not just for the people who want to drop off the grid and never look back. It's for anyone, living anywhere. We don't have to own a huge tract of land or a herd of goats to be more self-sufficient. On the contrary, I find that it's the little things that matter the most. Being prepared for everyday emergencies and becoming a more capable person are two of the most important facets of self-reliance. Without these, we are vulnerable, wherever we may live. While it's true that we cannot become experts in every single field of study, nor make every single resource we would ever need, we can try to live a more autonomous lifestyle. I hope you're ready to roll up your sleeves and get some dirt under your fingernails. It's time to go to work.

1 UNDERSTAND SURVIVAL PRIORITIES

A legitimate survival situation is one of those rare events that really emphasize the need for self-sufficiency. Whether you're lost in a forest, stranded on a deserted isle, hunkered down during a hurricane, or embroiled in some manmade disaster, you'll need to be able to provide for yourself and you'll need to be able to prioritize your necessities. That's where the survival priorities come into play. The survival priorities will vary based on your unique emergency situation (and we'll touch on some of these circumstances throughout this book), but your needs will be similar for most scenarios. These priorities highlight our vulnerabilities, organize our risks, and provide us with a sequence of actions (based on our current threats). In a wilderness scenario, for example, we can fall back to the old survivalist's mantra—shelter, water, fire, food, in that order.

SHELTER We address the most dangerous issue first, exposure. A survival shelter may not be comfortable, but it should be able to keep you from dying of exposure (and hypothermia can kill within hours).

WATER Water is the next most vital survival priority. We may only be able to last for a few days without any water to drink.

FIRE Fire is your third priority for most situations. While we could live indefinitely without fire's warm embrace, it's one of the most valuable assets that someone in the wilderness could have. Fire provides warmth, light, safe water (through boiling), cooked food, and an outstanding distress signal.

FOOD Food is the final piece of the puzzle. It's possible for the average person to last several weeks without food, but the impact of hunger can be felt very quickly, especially in cold weather.

What about situations that don't occur in the wilderness? First aid might be a top survival priority, if someone around you were badly injured or suffering some medical crisis. Defense could also be a top priority, in the wild, the suburbs, and the big city. Regardless of the survival scenario, you should always be aware of your priorities. Deal with the most dangerous things first, then start working your way down the list of less serious issues until you are safe (or living a self-reliant life).

2 ADAPT AS NEEDED

Even when you're not in an emergency survival situation, you still need to consider your priorities, especially when it comes to self-sufficiency. As an example, let's examine the seemingly simple scenario of a winter storm. If your power is knocked out during frigid weather, you can adjust your survival priorities to fit the situation. When you have shelter that's intact (like your home), but the utilities are out, the dwelling still won't be at its full potential to keep you warm during an ice storm or blizzard. A cold weather emergency can leave the modern home or apartment dangerously cold, and death from hypothermia is a very real threat. To complete the home's purpose of shelter and safe temperatures, you have to adapt things at your disposal. If you have a wood stove in place (with plenty of firewood) or non-electric space heater, the job of creating warmth is done. Without those assets, you have to get creative. You could take advantage of passive solar heat during daylight hours by staying in a room with south-facing windows. Better yet, you could lay out dark-colored blankets and rugs on the floor and furniture to absorb the heat from the sunlight. You could also hang thick drapes or blankets over the windows at night to block the chill coming off the windows after sundown. Warmth could also come from blankets and sleeping bags.

What if the cold weather isn't your threat? What if you need water? This lifesaving liquid is often a close second in importance to shelter. If you were lost in the backcountry or facing a utility outage in the wake of a natural disaster, you'd still need to be able to procure your own water and disinfect it for safe drinking. This can be done in many ways, and we'll cover several options within this book. The point is to use the survival priorities as a helpful framework, but not to be bound by them. You don't need to worry about finding water when you're bleeding to death, and you don't have to worry about building a survival shelter while someone or something is attacking you. Sometimes it's necessary to reorganize the priorities and change the rules. Just remember to identify your worst problem and deal with that threat first.

3 LIVE WELL

How can we define a life well-lived? For some, it's acquiring fame and wealth, no matter who gets stepped on along the way. For others, their success can be measured by living a purposeful existence by the sweat of their own brow. As we discussed in the introduction, everyone and anyone can become more self-sufficient. You don't have to be rich to reject society's norms, and you don't have to be an expert in anything. We should all strive to become lifelong students in many disciplines, especially those that give us satisfaction and meaning. If you don't already know, you'll probably be pleasantly surprised by the amount of satisfaction that physical work can bring. It doesn't have to be the "chopping down trees and building cabins" kind of work, either. In recent years, there's been a huge resurgence of interest for "back to the land" skills. Maybe you're interested in cooking from scratch or preserving your own food. Maybe you'd like to try raising animals or building a shed. At the end of the day, each step toward self-sufficiency is another step toward leading a more independent and rewarding life, and it's a step away from being overly dependent on others. To me, that's a life that should make us proud.

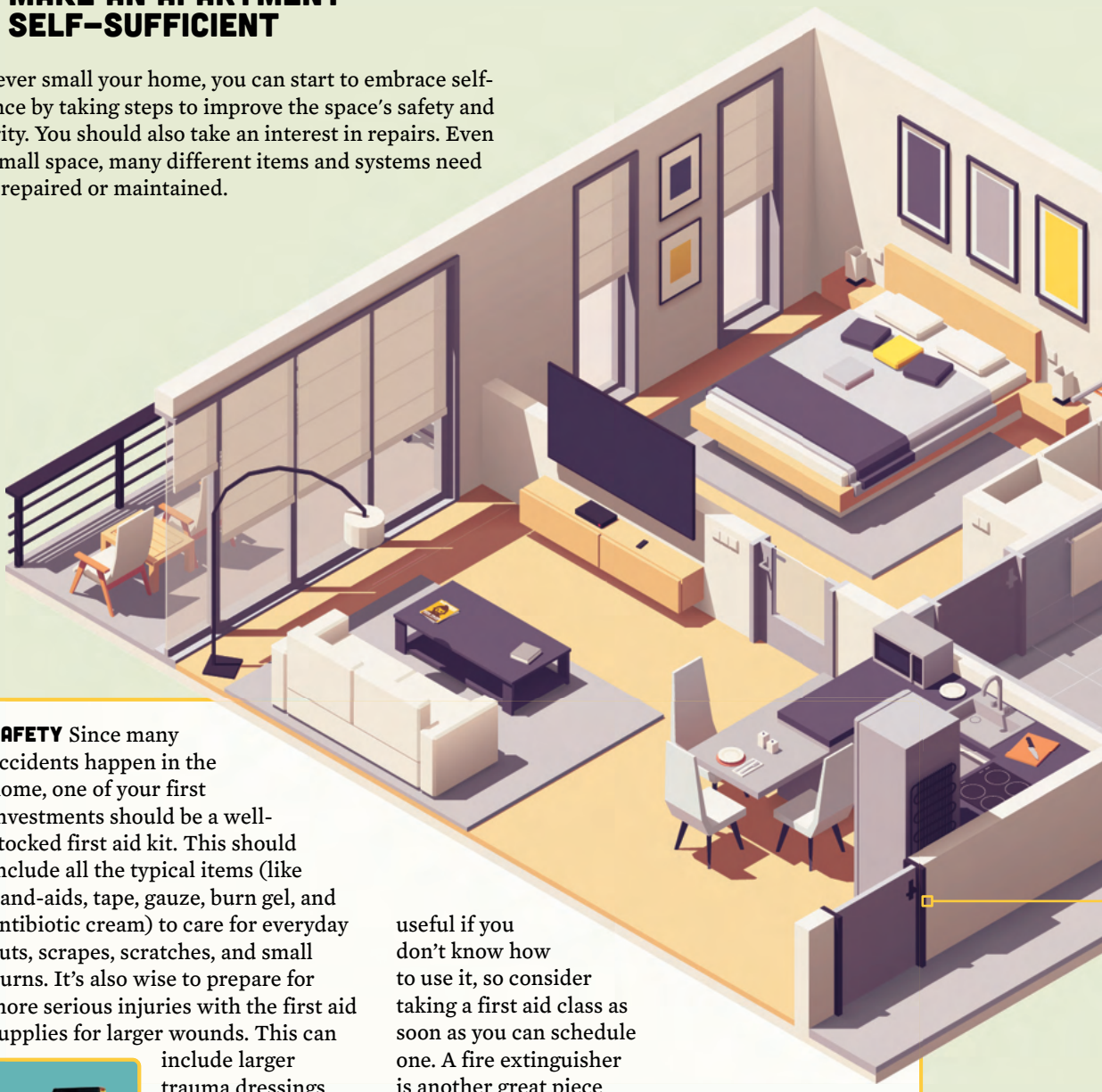
4 CHART YOUR OPTIONS

So what are the "nuts and bolts" of this self-reliant lifestyle? At first glance, it may seem like an assortment of random DIY skills that have been cobbled together by "homesteaders," both past and present. Yes, those skills are part of the package. There's also a psychological component to it. Self-sufficiency is the expression of an independent mindset and a hunger to be self-supporting and free. And whether we live in a palatial mansion or a cramped urban apartment, anyone can find ways to up their game and increase their self-sufficiency. Here are just a few of the options that await you.

ONE-ROOM STUDIO	SMALL APARTMENT	TOWN HOUSE	SUBURBAN HOME WITH BACKYARD	RURAL HOME WITH ACREAGE
ENHANCE YOUR SECURITY BY STRENGTHENING YOUR DOOR	CREATE AN ESCAPE PLAN TO GET OUT OF THE APARTMENT IF THE FRONT DOOR IS BLOCKED	ADD MOTION-ACTIVATED LIGHTING TO YOUR BACK PORCH	ASSESS ALL THE WAYS INTO YOUR HOME, THEN MAKE THEM LESS ACCESSIBLE TO THE BAD GUYS	ADOPT A LARGE AND PROTECTIVE DOG WITH A LOUD AND ALARMING BARK
DETERMINE YOUR NEAREST WATER SOURCE, SHOULD THE FAUCET STOP RUNNING	STOCK UP ON BOTTLED WATER IN THE EVENT YOUR UTILITIES GO OUT	CLEAR A PATH TO YOUR WATER HEATER AS A BACK-UP WATER SOURCE, AND PERIODICALLY DRAIN THE SEDIMENT FROM THE BOTTOM OF IT	WHERE LEGAL, SET UP A RAIN CATCH SYSTEM TO UTILIZE THE WATER THAT COMES FROM YOUR ROOF AND GUTTERS	DEVISE A BACK-UP PLAN TO GET WATER OUT OF YOUR WELL, SHOULD THE POWER GO OUT OR THE PUMP FAIL
PROVIDE EASY EMERGENCY MEALS BY STOCKING UP ON NO-COOK FOODS THAT ARE SHELF STABLE	BUY A CAMPING STOVE AND SOME FREEZE-DRIED FOOD FOR TASTY HOT MEALS DURING A UTILITY INTERRUPTION	FIND THE BEST WAYS TO COOK WITH YOUR OUTDOOR GRILL, AND STOCK PLENTY OF EXTRA FUEL (PROPANE OR CHARCOAL, AS NEEDED)	FILL A CLOSET WITH LONG-TERM FOOD STORAGE ITEMS AND BUILD A FIRE PIT FOR FAMILY FUN AND A BACK-UP COOKING OPTION	CREATE A SAFE ROOM AND STOCK IT WITH ENOUGH PROVISIONS TO LAST A VERY LONG TIME
TRY GROWING MUSHROOMS IN YOUR CLOSET (ON PURPOSE THIS TIME)	EXPERIMENT WITH WINDOWSILL OR BALCONY GARDENS IN POTS AND CONTAINERS	ADD SOME HERBS AND GARDEN VEGETABLES TO YOUR FLOWER BEDS	TRY A SPACE-SAVING GARDEN DESIGN WITH CLOSE SPACING AND PLANTS WITH A SMALL "FOOTPRINT"	GROW A FULL-SIZED GARDEN OR TRY SOME EASY GROWING CROPS
WHILE THEY'RE NOT AS APPEALING AS CHICKENS OR RABBITS, VARIOUS INSECTS CAN BE RAISED ALMOST ANYWHERE	TRY RAISING TROUT, CATFISH, OR OTHER FAST-GROWING FISH SPECIES IN A LARGE FISH TANK	CONSIDER RAISING "MEAT" RABBITS, INDOORS OR OUTSIDE, IF ALLOWED BY THE HOA AND LOCALITY	IF PERMITTED, TRY RAISING A FEW BACKYARD LAYING HENS FOR FRESH EGGS, JUST SKIP THE ROOSTERS WHICH WILL ANNOY YOUR NEIGHBORS	BUILD SOME FENCES AND ADD MEDIUM OR LARGER LIVESTOCK INTO YOUR SELF-RELIANCE EQUATION

5 MAKE AN APARTMENT SELF-SUFFICIENT

However small your home, you can start to embrace self-reliance by taking steps to improve the space's safety and security. You should also take an interest in repairs. Even in a small space, many different items and systems need to be repaired or maintained.



SAFETY Since many accidents happen in the home, one of your first investments should be a well-stocked first aid kit. This should include all the typical items (like band-aids, tape, gauze, burn gel, and antibiotic cream) to care for everyday cuts, scrapes, scratches, and small burns. It's also wise to prepare for more serious injuries with the first aid supplies for larger wounds. This can include larger trauma dressings and bandages, tourniquets, wound packing material, chest seals, and other sundries for serious injury. Of course, this gear isn't very useful if you don't know how to use it, so consider taking a first aid class as soon as you can schedule one. A fire extinguisher is another great piece of gear for any home. Kitchen fires are the top reason for home fires, so keep the extinguisher near the kitchen and readily accessible.

REPAIRS Trying your skill at repairs is a great opportunity for hands-on learning. For example, small carpentry tasks are well within the reach of most people. With a hammer and small finishing nails, you can reattach loose trim and moldings. With the right screwdriver, you can tighten loose cabinet doors and drawer tracks. When you feel good about those tasks, try something trickier. Make sure all of your windows open smoothly. Older wooden window frames may swell in humid weather, causing them to get stuck. This could be very dangerous if you needed to escape through a window and it wouldn't open. With a small pry bar, you should be able to free the window. With some wax, you should be able to lubricate the window track and get the window sliding again.

When it comes to maintenance and repair, there are many things that you can handle on your own, but make sure your burgeoning DIY skills don't lead to overconfidence. Since a shoddy electrical repair can start a fire and a botched plumbing job can flood your whole home, it's best to leave these repairs to the experts (until you become one yourself).

SECURITY Whether you live on the second floor or the twenty-second floor, your "front" door is the most likely point of entry for intruders. This door is probably the beefiest portal in your unit, but it may not be strong enough to block a determined home invader. Fortunately, there are a wide range of products on the market to fortify doors and upgrade their hardware. There are even some DIY options (like barring the door with a stout piece of lumber). Find out if you're allowed to modify the door, and if not, determine whether it's worth getting in trouble with the building manager to strengthen the door without permission. For an upgrade no one will notice, replace the hinges with stronger ones and use longer hinge screws into the door framing. Change the lock or have it re-keyed if you're worried about the number of duplicate keys floating around. Finally, don't open the door for anyone you don't know and trust.

6 GROW A SMALL GARDEN

Even in the gloomiest sub-level apartment, you can try your skills at growing things. This could be a mushroom farm in the closet. It could be a few lettuce plants in a pot underneath a grow light. You have options, though they aren't always the most practical. For example, a large mushroom operation will release a lot of spores into the air you are breathing. This can lead to respiratory irritation. And grow lights use a lot of electricity, making it cheaper to buy lettuce than to grow it in a dark space. For those with sunny windows or balconies, plants in containers and window boxes can be a great introduction to the basic skills of mini gardening. You may even be able to raise some small animals. This could be a hutch of rabbits or coop of chickens on the building rooftop (with regular bribes of meat and eggs to keep you in the manager's good graces). You won't always have guaranteed access to a rooftop, but when it's an option, it's worth a shot.

7 PACK YOUR PANTRY

Most apartments don't have an excess of space, but don't let the minimal storage stop you from stocking up. When setting aside the basic necessities, a small-space inhabitant should consider foods and supplies with a long shelf life and focus on foods that are easy to prepare. Since certain emergencies can knock out utilities, you may not be able to cook during a crisis. To prepare for this, stock up on no-cook foods. Conventional peanut butter (with preservatives) can last up to two years. Jams, jellies, and canned meats can last even longer. Pick out some crackers with a long shelf life, and you're on your way. Don't forget about water storage. A large case of bottled water is easy to ration and share. One 5-gallon water cooler jug can supply the needs of one person for a week (when they are frugal with the water). When the jug is factory sealed, the water will stay safe for a very long time. And if the 2020 pandemic taught us anything, stock up on toilet paper. A good average is one roll per person per week. Yes, toilet paper is bulky to store, but it's also cheap and it lasts forever (unless it gets wet or rodents shred it for nesting materials).

8 MAKE A HOUSE SELF-SUFFICIENT

With great square footage, comes great responsibility. The extra living space of a larger home will generally carry a higher price tag, but remember that it will also require more maintenance and may expose you to greater risks.

MAINTENANCE Entire books have been written about home repairs and upkeep, and there are many different skill sets that come into play. Home maintenance is one issue, while home repair is something separate. As a third area of interest, home improvement can also be on our radar. As a homeowner or renter in a larger home, there will be more responsibilities on your shoulders, but that's just part of the package. A larger space can be more of a pain to maintain, but the benefits usually outweigh the trouble. There are plenty of places where we can perform basic maintenance ourselves. For example, if you can safely clean your gutters a few times a year, you can help to prevent roof leaks in the home. This small act of prevention can in turn prevent the need for drywall repairs, insulation replacement, and mold remediation. In short, do what you can safely do by yourself, and bring in a pro for anything else.

SECURITY There are many points of vulnerability in a larger home. Two of the main goals of security are to discourage anyone from even trying to enter, then to increase the challenge to anyone still determined. Adding bright exterior lighting is a great deterrent for nighttime, but many burglaries happen in broad daylight. Keeping doors and windows locked, both day and night, is a great defensive strategy. A professionally installed home security system is another great option. These diverse systems can be customized

based on your budget and the layout of your home. For additional security, consider purchasing a safe. This could be a small fire-resistant safe for important documents and small valuables, or a gun safe for large rifles (and crates full of valuable objects and papers).

SAFETY Given that a larger home may mean that more people live under your roof, it's wise to upgrade your first-aid and safety equipment. A more robust first aid kit is a must-have item for a larger living space and more people. Larger fire extinguishers (and several of them) are a smart idea too. Make sure there's one near the kitchen. If you have a garage, keep a fire extinguisher there as well. On the fire theme, make sure you have multiple fire/smoke/carbon monoxide alarms in a larger home. According to the National Fire Protection Association, nearly three out of five house fire fatalities occur in homes without a working smoke alarm. Install these throughout the home (not just in one room), test them monthly, and change the batteries annually. In a household with young children, consider kid-proof cabinet locks or latches for the kitchen and bathrooms. Outlet covers may also save experimental youngsters from a nasty shock.

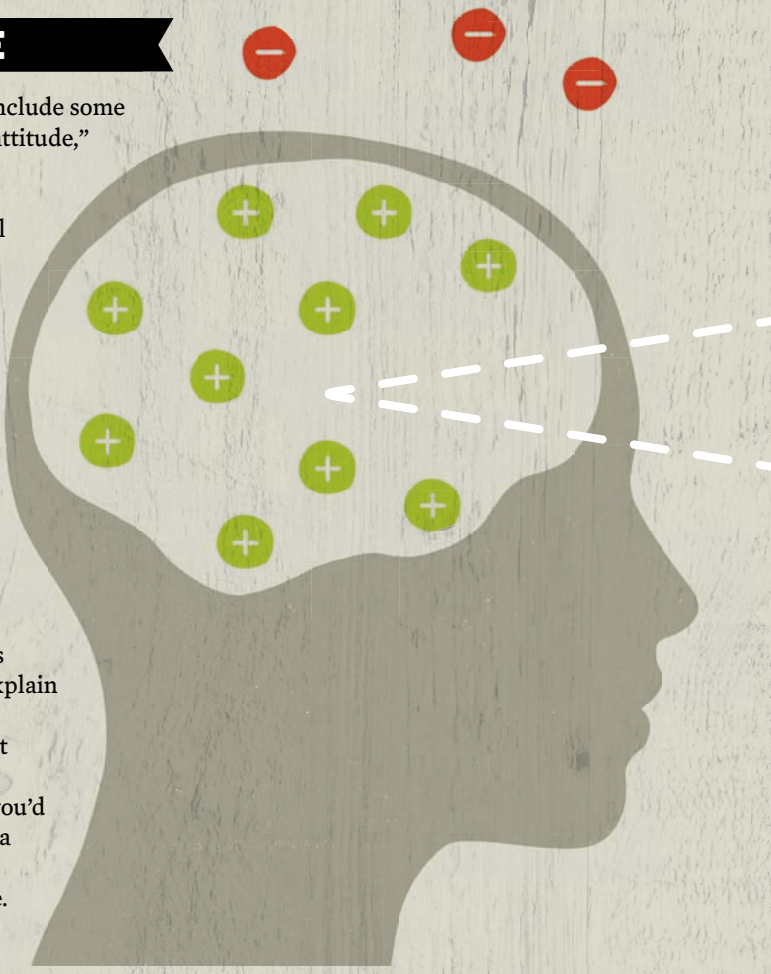
9 GROW A BIGGER GARDEN

You don't have to go off-the-grid or buy a farm with rolling green pastures to have food crops and animals. Even in the "postage stamp" backyard of a small townhouse, you might be surprised how much food you can grow. Vegetables, herbs, spices, and tea plants are within your reach if you have tolerable soil and at least 8 hours of uninterrupted sunlight. Try growing hardier plants for your first attempts at food production. Root vegetables such as potatoes, carrots, and radishes are tough and easy to grow. Green beans and pumpkins are also tolerant of diverse growing conditions (and the occasional forgotten watering). Salad ingredients like lettuce, cucumbers, and cherry tomatoes can also be good choices for first-timers. In a bigger backyard, you'll even have room for a compost pile and a perennial herb garden. Mint, thyme, winter savory, yarrow, rosemary, and lemon balm will come back year after year, unless the winters are too cold. Backyard chickens and rabbits are also great options, where allowed by HOAs and local ordinances. Maybe skip the roosters, though. They crow all day long, and they tend to really annoy quiet neighbors.

10 STOCK YOUR SUPPLIES

Whether you decide to stuff your kitchen pantry to the ceiling or turn an entire room into a food storage locker, a larger home can certainly expand one's options. My best advice here is to start off slowly and deliberately. Unless you know for sure that the apocalypse is tomorrow, don't come home with a vanload of random foods on your first trip to the store. Stocking up on supplies (especially food) should be done thoughtfully and carefully. In addition to storing the ready-to-eat foods that we mentioned for apartment dwellers, you'll also need enough room to build a canned good stockpile and even long-term food storage. Buy samples of each food item you are considering and incorporate them into regular meals to test their flavor, texture, and digestibility. Stock up on foods that are long lasting, easy to prepare, and a hit with your eaters. Generally speaking, you get what you pay for in food storage products, but even some of the expensive items may not sit well in your family's collective stomach. What good is a bucket, or barrel, or pallet of freeze-dried beet roots if they taste terrible or create a line for the bathroom?

11 KEEP A POSITIVE ATTITUDE



In modern society, the idea of attitude has grown to include some negative connotations. When a person gives you an "attitude," their demeanor may be uncooperative or straight-up antagonistic. That's not the kind of attitude we mean. In this framework, attitude is the way we think or feel about a person, place, or situation. These complex thoughts and feelings can be oversimplified into two categories: a positive attitude and a negative attitude. You may be wondering what this mushy stuff has to do with a bare-knuckled fight for survival? It matters because your attitude has a direct impact on your behavior, and your behavior can determine whether you live or die. We aren't just citing a "positive mental attitude" as a beneficial survival trait because everyone else talks about it. If anything, that just emphasizes the fact that you should pay close attention to the topic.

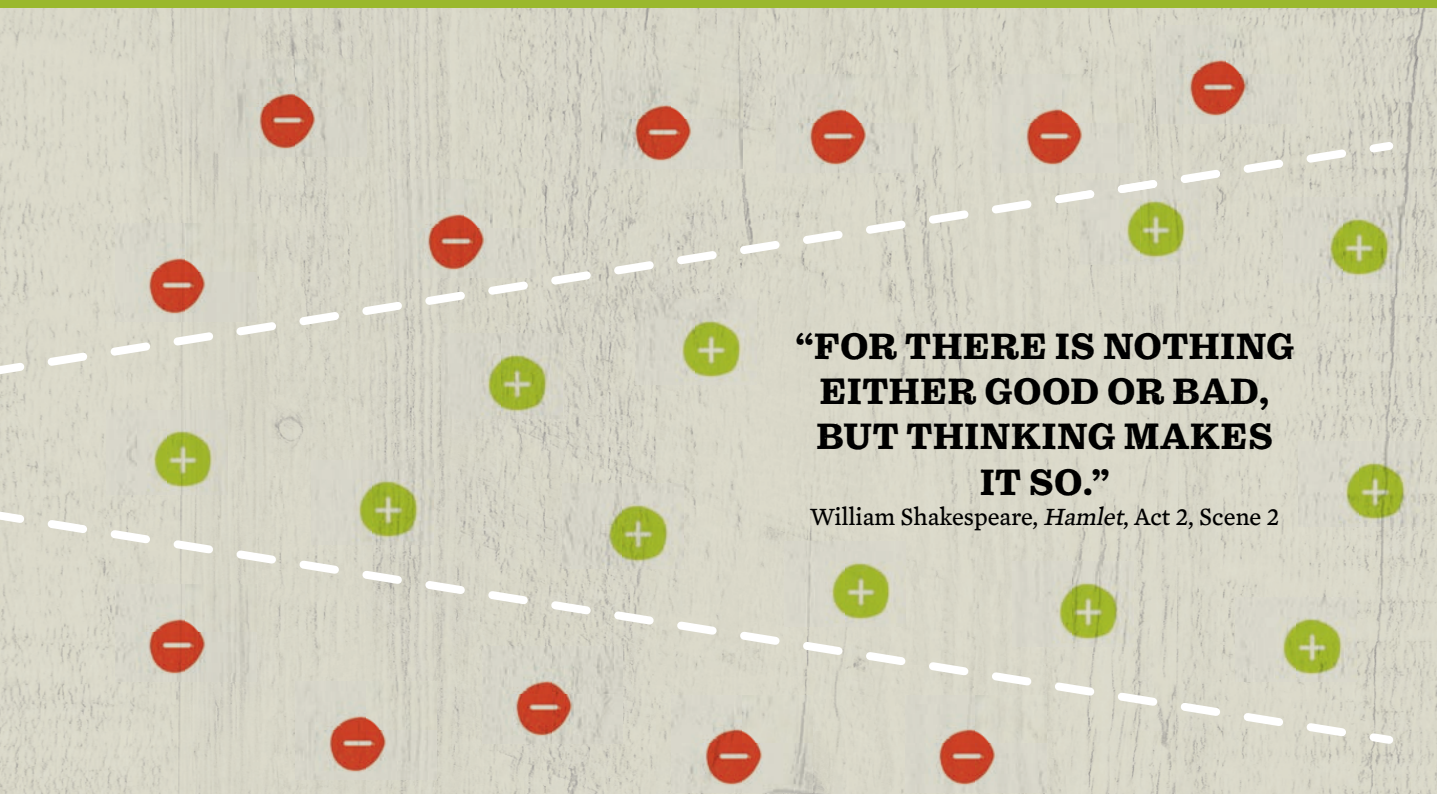
While it's not as badass as tenacity or as clever as creativity, the survival mentality trait of "positivity" is one of your biggest assets in an emergency. I like to explain positivity to my survival classes as a lens that you are looking through. It's a little like "beer goggles," except that it doesn't make everyone a "perfect 10" on the attractiveness scale. A positive attitude is a lens that you'd look through, allowing you to see the brighter side of a situation. It is a hard skill to master, but it's worth the work as your attitude is vital for the upkeep of morale. And this upbeat attitude isn't just handy when you're lost in the wilds. You can use it every day.

THE PROBLEM Pessimism is the outlook that can ruin your positive attitude. Whether you're a lifelong "glass half empty" person or the emergency is just starting to wear on you, this destructive viewpoint can derail your positivity. Pessimism can make any situation feel worse than it really is, and it will usually have a negative impact on your outcome.

THE REMEDY Find the "silver linings" in your situation, and be grateful for them. Don't pretend to be grateful; be overwhelmed with thankfulness. Do you have air to breathe? Be grateful for it. Are you uninjured? Be thrilled. Even in the worst settings, you can find things that ARE going your way. If you're grateful for them, it can change your whole attitude.

"CHOOSE THE POSITIVE. YOU HAVE CHOICE, YOU ARE MASTER OF YOUR ATTITUDE, CHOOSE THE POSITIVE, THE CONSTRUCTIVE. OPTIMISM IS A FAITH THAT LEADS TO SUCCESS."

Bruce Lee



"FOR THERE IS NOTHING EITHER GOOD OR BAD, BUT THINKING MAKES IT SO."

William Shakespeare, *Hamlet*, Act 2, Scene 2

12 MAINTAIN PERSPECTIVE

One of the most important things that can help us to control our attitude is perspective. We get the word perspective from ancient root words meaning to "look through" (*spek* meaning look and *per* meaning through). In this context, perspective can be defined as our viewpoint on something or our way of seeing a situation. Here's an example. If you feel that a certain type of music is instilling evil thoughts in innocent people, then your perspective of the recording studio that produces the music would be that it is an evil place. Flipping the example, if you feel that the same music provides uplifting entertainment, the studio would be a good place from your point of view.

For those "old souls" and anyone who has had a hard knock life, you're likely to have many insights and perspectives on any given situation or predicament. For those who are young and anyone who has lived a sheltered life, you may not have the life experience yet to allow you to examine your troubles from different perspectives. Count yourself lucky if you fall into the latter group, and try to develop perspective by educating yourself (and not by learning "the hard way"). Study the real-life experiences and hardships of others. Listen to people, especially those who have been in tough situations. Learn what you can and remember those lessons. Allow these perspectives to shape your attitude. Perspective is everything.

PUT IT TO WORK!

The next time your campout gets rained out, try a different perspective. Instead of complaining about the rain ruining your fun, try to be thankful for all the free water you're getting. Now you can wash your hands and dishes as much as you like, and if it's not too cold, you can even grab a bar of soap and take a bath in the soft rain. Some people pay big money for water softening systems and rain-simulating shower heads, but for those who can stand a cold shower, Mother Nature can give you a great one for free.

13 KNOW THE BASICS

Somehow, millions of people make it through life without learning these basic skills. They may not seem related to survival—but you just never know when you'll be confronted with an outside-the-norm situation, such as having only one working car available for a getaway and a group of people who have never driven a stick shift. Here are a few of those things that you should already know—and if you're missing any, you should learn and teach others, pronto.

PERFORM ARITHMETIC You don't need to be able to perform vector calculus in your head at the drop of a hat, but you should know more than just 2+2=4. When you're trying to determine measurements for building, or doing a little bartering, you may not have a calculator available.

LEARN BASIC AUTO CARE This is one of those skill sets you might think you have a good handle on—but it pays to be sure. At the least, you should know how to change a tire, as well as your oil and filters.

OPERATE A MANUAL TRANSMISSION Whether your creaky old uncle scared you off his truck when you were 16 or you simply never had any other car besides automatic put in front of you, go find a friend who's into cars and get driving.

HANDLE BASIC TOOLS You don't need to master a router, drill press, table saw, or belt sander for every possible need, but you should know how to handle tools. We'll assume you can probably use a hammer or screwdriver without help, but make sure you're good with the rest of the toolbox as well. A handsaw or ax can be trickier than you might think.

RIDE A BIKE You never know when having to get somewhere in a pinch may come down to a set of wheels powered by your own two legs—and the cliché that you never forget how to ride a bike isn't really true. You should definitely consider learning to ride a motorcycle as well.

14 REVISIT HOME EC

Think sewing's got nothing to do with survival? Wait until that first cold winter when your old coat is falling apart and the nearest settlement is a day's walk through the snow. A lot of the skills seen today as mundane tasks or outdated pastimes were vital to our forebears' subsistence—and might be again.

SEW It's not just a skill for little old-fashioned grandmas. Learning to sew means you can patch up a damaged piece of clothing or make a new one. It's a skill that's transferable to fixing other items and, to a degree, even to medical care.

COOK THE BASICS This doesn't mean pouring boiling water over a cup of noodles. Basic cooking knowledge encompasses how to stay healthy, what wild foods are edible, and how to safely prepare the food you've stored and that you hunt or gather—as well as avoiding kitchen injuries and foodborne illness.

PLANT A GARDEN In this day and age, not very many people know how to keep a plant alive—much less grow a garden. Learning to properly cultivate plants isn't just about having pretty flowers or a pot of herbs at your window; it's another of our oldest skills—and one that you could potentially use to grow your own food.

15 BUILD YOUR SURVIVAL SKILLS

Everything that's in these pages can be considered a survival skill, but some situations are a little bit more immediate than others. After all, if you need to learn to garden, there's probably time for someone to teach you. If you need to learn how to win in a fistfight, that's a good thing to know before the brawl breaks out. The skills below will help keep you alive and unharmed when the chips are down.

READ A MAP Don't just rely on a GPS or smartphone's navigation software. Know your way around a real map, on paper. Learn how to find where you are and how to get where you're going—and you should know how a compass works, too.

BUILD A FIRE This is one of humanity's oldest and most important skills. Even if you have matches or a lighter, you should learn how to start a fire without them; it's a skill that might save your life.

SWIM You'd be surprised how many people don't know how to swim (or aren't confident in their abilities), and considering that more than 70 percent of the Earth's surface is covered by water, it's a lifesaving skill. If all else fails, you should at least know how to tread water and how to float on your back.

RIDE A HORSE You don't have to make like the Lone Ranger, but in a hard-core survival situation, horses might be your best or only form of transport. Knowing how to saddle up and ride with some skill will keep you from being sore, laughed at, or left behind. Extra points for mastering the art of mounting and riding bareback.

KNOW BASIC FIRST AID Even knowing how to take care of minor injuries can make a big difference in a difficult situation. Add in some CPR training and the Heimlich maneuver, and you're well on your way to the foundations of medical care.

TAKE AND THROW A PUNCH You might hope never to get into a fight, but if push comes to shove (or jab, or hook, or uppercut), you should learn how to defend yourself and others with your bare hands.

HANDLE A GUN Firearms are both a tool and a weapon, and, as such, owning one involves great responsibility. Plenty of people are unreasonably afraid of guns simply because they don't know very much about them. Even if you've never hunted or don't expect to have to defend yourself, take a basic firearms course at a local shooting range. You'll learn how to safely handle and use a gun, should the need ever arise.

16 TAKE AN INVENTORY

In our recurring feature on 5-Minute Self-Sufficiency, we're going to take a look at several quick things you can do to boost your independence and enhance your self-sufficiency plans. One of the simplest (and most foundational) things you can do is to take stock of the supplies and resources you already have. This inventory list will help you to keep track of your resources and discover the things you still need. For those who like lists and organization, this exercise may seem like a treat. For those with a less structured way of doing things, it might seem like drudgery. Either way, this is a homework assignment that you won't want to ignore. Of course, it may take you a lot longer than five minutes to count everything you own that can be used for self-sufficiency, but creating a basic inventory sheet shouldn't take too long. Obviously, we're not expecting anyone to count each grain of rice in each food bucket, but it's very helpful to know how many pounds you have (so you can determine how many servings of rice you can make).

SHELTER AND WATER	FOOD
SPACE BLANKETS	PANTRY FOOD
SLEEPING BAGS	CANNED GOODS
RAIN GEAR	FREEZE DRIED
GALLONS ON HAND	LONG-TERM FOOD
DISINFECTION SUPPLIES	SEEDS
WATER STORAGE CONTAINERS	PET AND LIVESTOCK FOOD

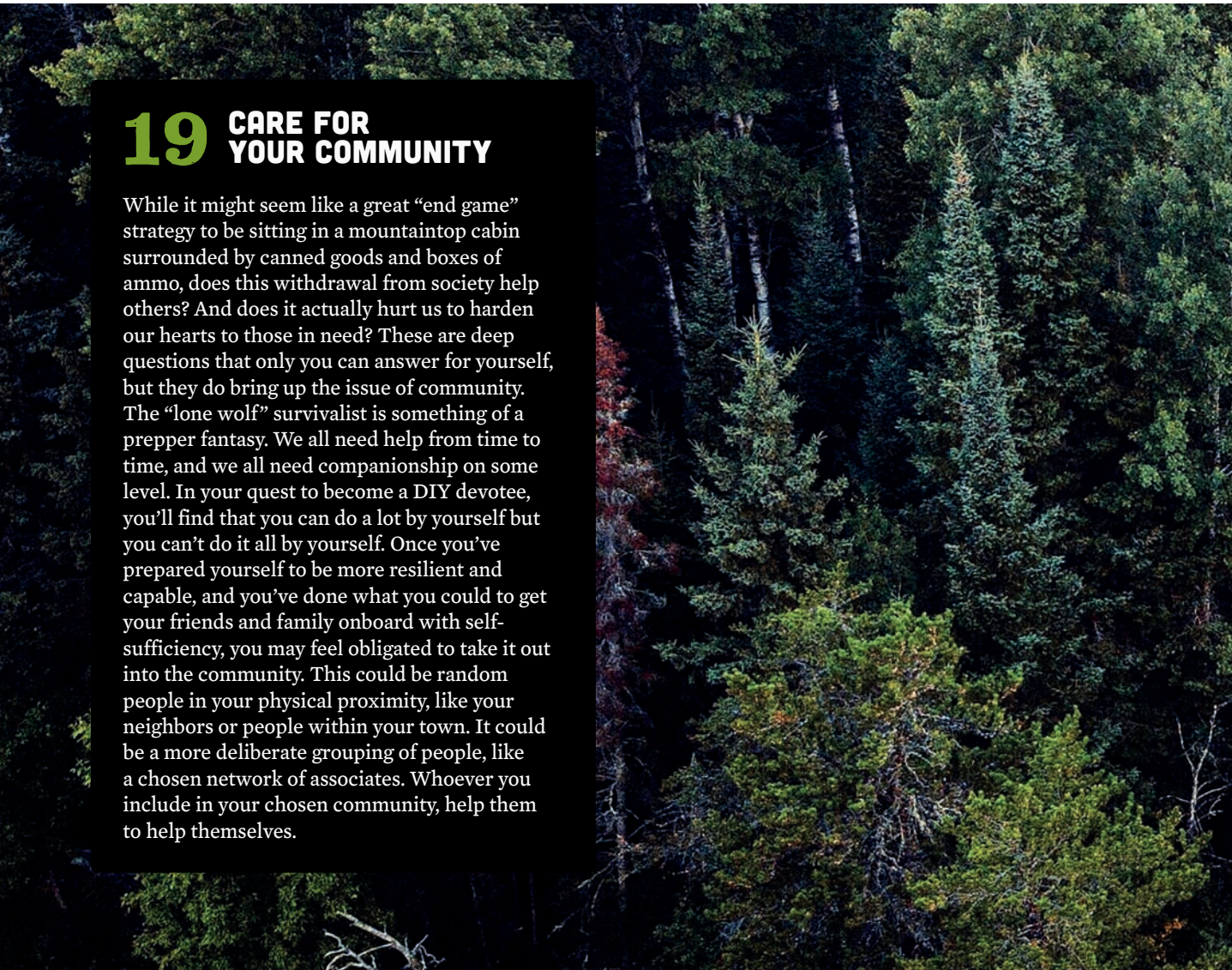
17 CHART IT OUT

Without a crystal ball to predict the future, it may seem difficult to determine what you should add to your inventory and what you shouldn't worry about. Don't worry, we're here to help. From violent natural disasters to tough personal times, we typically need the same resources and supplies. These can be organized in any form you like, though it's usually helpful to group things by the survival priorities or by their location. Leave plenty of room on the sheet for new additions and make a spot for item counts. It's also smart to consider your own safety. Don't hand out your inventory list to anyone that you don't trust with your life (and it certainly shouldn't have a map to your house on the back either, just in case someone turns out to be a prepper predator).

FIRST AID AND SANITATION	ENERGY	COMMUNICATION	DEFENSE	OTHER
EVERYDAY	CHARGERS	BACK-UP PHONES	DETERRENTS	VICES
TRAUMA	GENERATOR	WALKIE-TALKIES	WEAPONS	MORALE BOOSTERS
MEDICINES	FUEL FOR GENERATOR	CB RADIO	AMMO	ENTERTAINMENT ITEMS
HYGIENE PRODUCTS	SOLAR	HAM RADIO		
SANITATION SUPPLIES	OTHER POWER			

18 PRIORITIZE YOURSELF (TO HELP OTHERS)

If you've ever flown on an airplane, you've heard the safety talk advising you to "put on your own oxygen mask before tending to your seatmate." This is great advice for the rare (but scary) loss of cabin pressure. It's also a great metaphor in the realm of self-sufficiency. Being capable of providing for yourself will naturally put you in a position to be able to help others. Most of us start out in preparedness by worrying about numero uno: ourselves. But as we crawl further down the rabbit hole of self-sufficiency, we soon realize that our friends, loved ones, and the strangers around us are all painfully underprepared for emergencies and disasters. With this in mind, you can take action by trying to educate others and inspire them to be more self-reliant. Should that fail, you can simply start preparing for others (with or without their knowledge). For example, let's say that you decide to stock up on a month's worth of food for your immediate family. That's great, but what about your sibling's family? You know, that brother or sister who thinks you are insane for even talking about self-sufficiency, but who will be the first person to show up on your doorstep when things go sideways? You'd better stock a shelf for them too.



19 CARE FOR YOUR COMMUNITY

While it might seem like a great "end game" strategy to be sitting in a mountaintop cabin surrounded by canned goods and boxes of ammo, does this withdrawal from society help others? And does it actually hurt us to harden our hearts to those in need? These are deep questions that only you can answer for yourself, but they do bring up the issue of community. The "lone wolf" survivalist is something of a prepper fantasy. We all need help from time to time, and we all need companionship on some level. In your quest to become a DIY devotee, you'll find that you can do a lot by yourself but you can't do it all by yourself. Once you've prepared yourself to be more resilient and capable, and you've done what you could to get your friends and family onboard with self-sufficiency, you may feel obligated to take it out into the community. This could be random people in your physical proximity, like your neighbors or people within your town. It could be a more deliberate grouping of people, like a chosen network of associates. Whoever you include in your chosen community, help them to help themselves.

20 KNOW YOUR LIMITS

Time to face a grim reality: you can't save everyone. Self-sufficiency can be a noble thing, as is helping others with your extra knowledge or inventory, but it's important to know your limits and set boundaries. You'll also need a strategy for enforcing these limits. You may have enough food stockpiled to feed your entire extended family for 6 months, but I doubt you have enough to feed them and all of your neighbors for more than a few weeks. After that, you all may starve. It's a hard truth to face, but you can't save everybody. Survival can be a lot like a small lifeboat. After the ship sinks, there's plenty of room in the lifeboat for you, but as you pull more survivors into the little craft, it sinks lower and lower into the water. At some point you're out of space, and the last person you pulled in will sink the boat, drowning you all. This sobering scenario isn't something we can ignore. Just as you plan for the people you will be supporting, you'll also need to decide who you can't support and how that will be likely to play out (during both minor troubles and major disasters).

21 PLAN YOUR PET'S PANTRY

As you build a food storage plan for your family, don't forget the non-human members of your "wolf pack." One quick way to build a long-lived food supply for cats and dogs is to buy canned food. These airtight metal containers are able to keep out the bugs and rodents, and they are great for rationing. Another option is to buy dry pet food in long-term packaging from an emergency food supplier. Some of these products are multi-pet formulas (feeding both dogs and cats), but these are intended for short-term feeding. Yes, cats and dogs can eat each other's food in an emergency, but cats are obligate carnivores and dogs are omnivores. They each need the right diet for long-term health. Both dog food and cat food contain protein, but dog food also contains a generous amount of grain and vegetables to suit their omnivorous diets. Cat food contains proteins and animal fats, with limited grain or vegetables. The carbs in dog food (usually from rice and corn) are tolerable to many cats, but cat food has a high caloric density, high protein levels, and heavy doses of fat, which aren't ideal for canines and can lead to weight gain and pancreatitis over the long term.

22 BE YOUR OWN PET VET

In a situation where you're unable to get to a vet or the first aid issue is minor, you may be able to treat your pet at home. Many first aid items that are made for use on humans can be used on animals as well. In addition to pet medicines, you'll also want to maintain a well-stocked "pet first aid" kit. This can be a store bought prepackaged kit or a home-made kit that you have stocked yourself. Here are some items to get you started.

TWEEZERS
To remove splinters, ticks, or foreign materials from wounds.

STYPTIC PENCIL
To stop bleeding.

TOENAIL TRIMMER
To clip torn toenails.

SCISSORS
To cut fur, bandages, etc.

NON-STICK DRESSINGS
For bandaging a wound.

STERILE EYE WASH
To clean out debris from the eyes and artificial tear gel.

TAPE AND GAUZE
To hold dressings in place.

VET WRAP
To bind dressings in place (similar to Ace bandages).

23 GIVE 'EM SHELTER

While your cat may occasionally attack you like some feral beast, house pets are not wild animals and most of them are only semi-self-sufficient. They still need our daily support and most would have a tough time fending for themselves in the event that they were separated from their family during a crisis. If we're able to stay in our home during an emergency, the same shelter that protects us from the elements will give them a roof overhead and protection. In the event we have to leave the home, however, things can be tricky for pet-loving families. Wherever you end up, you'll want to cover the basics to keep your pet healthy, safe, and sheltered. Consider a bin, box, or backpack of supplies for your pet. This should include shelf-stable food (either dry food or canned food). You'll also want to consider a harness, leash, carrier, blanket, collapsible/silicone bowl, and any medicines that they might require. And don't forget to bring extra drinking water for your pets as well.

MUZZLE
To prevent bites while administering first aid.

EXAM GLOVES
For your protection.

24 STOCK UP ON PET MEDS

It's sad to think about, but pets get hurt too in emergency situations. In addition to keeping a record of your pet's vaccinations, you'll want to have some basic medicines on hand to ensure that your pet stays healthy and safe.

ANTISEPTIC WASH OR WIPES Such as betadine, to disinfect wounds and sores.

VET-PRESCRIBED PAIN RELIEF (NSAID) Do not use human pain relievers for pets. Some medications, such as Tylenol, are poisonous and may be fatal to pets.

DIPHENHYDRAMINE Such as Benadryl, for stings and allergic reactions. Figure out the proper dose with your vet, and make a note of it.

ANTIBIOTIC OINTMENT To treat minor wounds.

FRESH 3% HYDROGEN PEROXIDE For wound care and to induce vomiting (if you have phone signal, check with your vet or an animal poison control expert before giving anything to your pet to induce vomiting).

25 USE WHAT YOU'VE GOT

What are the minimums for self-sufficiency and security when it comes to safely sheltering yourself, either temporarily or long-term? Most of us can't afford a second property in a remote area with a deep-buried bunker (and honestly, there are situations where that wouldn't even help, like a natural disaster with heavy flooding), so we should stop worrying about the things we don't have and focus on the things that we do have. For the average person, it makes the most sense to start where you are and use what you've already got. We humans need shelter from many threats. Our most basic shelter requirements are protection from temperature extremes, wild weather, burning sun, wild beasts, and bad guys. You can achieve these defenses by staying in place in your apartment or home following an emergency event. Stay inside, secure the doors and windows, and stay alert to minimize your exposure to all threats. You can also provide your own shelter if you're stuck outdoors or you are traveling to reach a safer location. A tent, sleeping bag, and sleeping pad can be the buffer you need from the environment. Traveling with others (and taking turns at guard duty over your makeshift camp) can help with the security issues. The main thing to remember is that you can wish for many things, but you can only use the things that you can lay your hands on right now.

26 SIP IT UP

A SIP (Shelter-in-Place) kit incorporates the things you need to hold down the fort in a very short-term emergency, or a ruckus that doesn't necessarily cause you to flee the region. Cash is "king" in most emergencies, so make sure you have some cold hard cash (in small and large bills and change) in your kit. This is vital in the event that you're in a grid-down situation or telecommunications are knocked out (which will prevent you from paying for things with plastic cards). You'll also want your "SIP kit" to contain some dedicated survival supplies such as drinking water; ready-to-eat or canned foods with a long shelf life; a manual can opener; disposable cutlery, plates, bowls, and cups (so you don't have to waste water washing dishes); a first aid kit; at least one flashlight with extra batteries; a battery-operated AM/FM radio (with extra batteries, or a wind-up/solar radio); backup batteries or power banks for cell phones; water disinfection supplies; personal hygiene items; trash bags; plastic sheeting and duct tape (to block windows and doors); and any specialty items that family members might need. For families with pets, make sure you have ample food and extra water for them as well. These goodies can all be stored in plastic bins in a cool, dark, dry closet. Just make sure you keep the dry things together, and keep the wet things separate. Water jugs can leak, and this may ruin many of your other supplies when boxed up together.

27 PREPARE FOR LOCKDOWN

As the rollercoaster year 2020 has illustrated, a lockdown can happen for any number of reasons: civil unrest, pandemics, fires, and more. When these "stay at home" orders come down from our leaders, you'd better be ready to comply, and you'd better be ready to be self-sufficient. How exactly do we prepare for an isolation situation that might last an hour, a day, a week, or a month? We're glad you asked.

ONE HOUR Take this time to prepare your household for a change in the orders (moving from one hour to a longer period of time). Take inventory of the things you have, try to decide how long your supplies will last, and stay informed about the situation. Get your things together and be ready to flee, if that order comes down.

ONE DAY Get ready for the lockdown to last longer than a day. Take the steps mentioned for "One Hour" and figure out which of the fresh foods you should eat first from your kitchen. Get your bug out bag ready, too.

ONE WEEK Something pretty bad has happened, so you'll need to run under your own steam for a week. This could include utility outages, so prepare yourself for "camping" in the living room. This may mean cooking on a camping stove and relying on the stored food, water, and supplies you've set aside. Get ready to run, if needed.

ONE MONTH Hope you stockpiled plenty of food, water, medicines, and things to stave off boredom. A plague or some other lengthy crisis could leave you cooped up for a month or more. Be ready to evacuate, and make sure you have enough calories for your household (and the self-control to ration the food). Good luck!

28 REINFORCE YOUR HOME

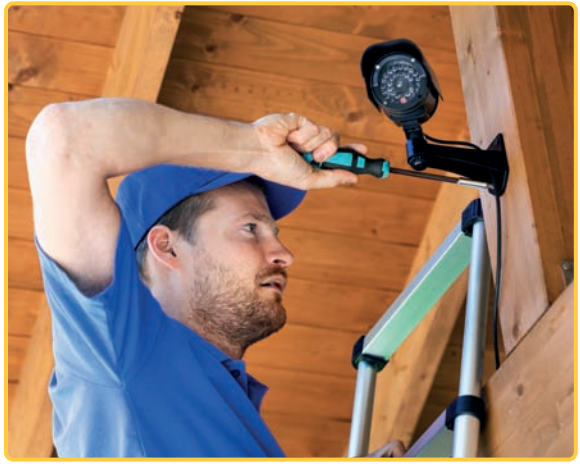
Nothing is going to stop a Mad Max–style gang of marauders from tearing their way into your home during the apocalypse, but you can toughen up your home against common thieves and make it harder for them to gain entry.

LOCK THE DOORS Solid-core doors and beefy deadbolts are a great way to discourage break-ins. Yes, these can be pricey, but they should add value to your dwelling and a little more peace of mind to your night's sleep. Sliding-glass doors are extremely vulnerable; be sure they have a locking steel pin to keep them from being forced open, or go low-tech with a length of dowel or 2x4 that you can place in the door's tracks to keep it from being forced open by intruders

TOP TIP

Even if you don't have a dog, or your dog is pocket-sized, leave a large dog bowl and chew bone by your back door. Write a thief-frightening name on the dish, such as Diablo, or something else that implies great size.

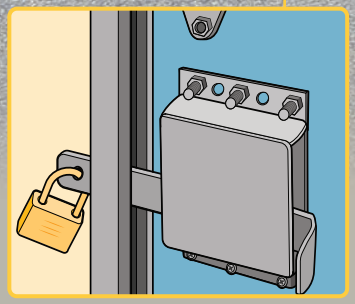
BE WINDOW SMART If any of your external doors has a glass pane in it, make sure it's made of shatterproof plastic or safety glass. Be sure that all of your windows lock (however, also be sure they're easy to unlock from the interior, for fire safety).



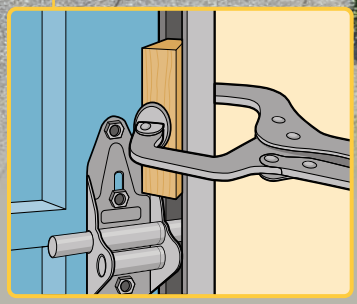
GET A HOME SECURITY SERVICE It's hard to beat an actual alarm service and monitoring. Modern services even include fire detection, carbon monoxide monitoring, and other features. If the cost is deterring you, sit down and write down what your life is worth. It should be worth more than what the alarm service costs.

29 DON'T FORGET THE GARAGE

Your garage door is a particular point of weakness, since most of them have rather flimsy construction. If you have a security system, be sure it covers the garage (you'd be surprised how many people forget this step). If you have an automatic garage-door opener, you can reprogram it to be different than factory settings. Contact the manufacturer for details—it's usually very simple and adds an extra layer of security.



If you're going out of town (or want to be extra secure overnight, or when home alone), you should consider installing a slide-bar latch or a padlock to keep the door from being manually rolled up. You can also cut a piece of wood to fit snugly into the door's track, and clamp it in place, preventing it from rolling up. Disable the opener beforehand so that, if you forget and try to open it, you won't damage the door.



30 BUILD YOUR TOOL KIT

Everybody should have some basic hand tools around the house to fix things up when your castle starts feeling more like a hovel. Take this list on your next trip to the hardware store.

CLAW HAMMER
For carpentry and home repairs.

SCREWDRIVER SET
Get an assortment of sizes and types.

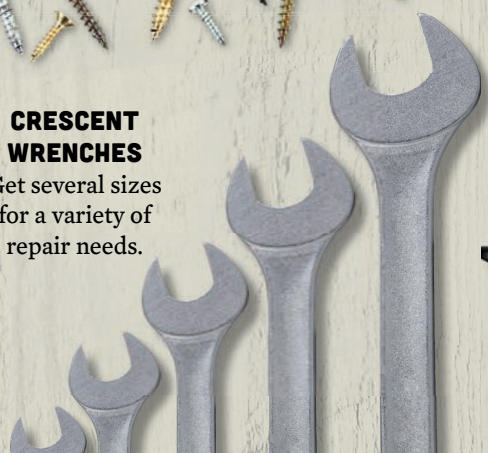
HACKSAW
For cutting metal and plastic.

RASPS AND FILES
To repair and sharpen other tools and items, focus on metal files.

NAILS AND SCREWS
A variety of diameters and lengths will come in handy.

STANDARD AND METRIC SOCKET SET
For mechanical repairs.

CRESCENT WRENCHES
Get several sizes for a variety of repair needs.



HANDSAW
Get one for wood cutting; a higher "tooth" count makes clean cuts.

DUCT TAPE
You can fix just about anything with duct tape.

SUPERGLUE
Fixes what the duct tape cannot.

31 GET CREATIVE WITH YOUR TOOLBOX

When times are tough, you may not have the luxury of popping on down to your local superstore to find just the right item for the job. That's when you think like the pioneers—what would Pa Ingalls have done? Here are a few ideas. We bet if you look at your workshop with a creative eye, you'll come up with a few more.

CARRY DRYWALL Big sheets of drywall, plywood, or even heavy cardboard can be a real hassle to carry around if you don't have arms like a chimpanzee. Use a pry bar as an arm extender to grab the bottom of the sheet. No ape sounds needed, but go for it if you like.

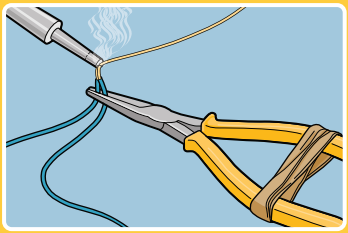
PULL ELECTRICAL STAPLES It can be tough to pull out those staples that hold down cables without damaging the actual line. Diagonal cutting pliers make the job easy.

REMOVE STUBBORN NAILS If your hammer just can't grab that nail—or, worse, if its head has broken off—use locking pliers to grab it. Clamp the nail and pull downward to curl the nail out of the wood.

TIE IT SECURELY When you need to hold together something big or unwieldy, like a coiled extension cord or a rolled-up tarp, a few lengths of copper wire can be really handy. It's easy to cut and bend, and you just have to twist it once to get it to hold.

HOLD A SMALL NAIL Needle-nose pliers can hold that tiny nail in place better than your stubby fingers . . . and won't scream if you hit them with the hammer by accident.

FAKE A HEMOSTAT Those needle-nose pliers also come in handy when you need to create the kind of flexible lock that hemostats make for cheap. Great for holding wires to solder or cable when you don't have enough hands, one can be made with a pair of pliers and a rubber band.



100 FEET (30 METERS) OF CORDAGE
For tie-downs and bundling jobs.

UTILITY KNIFE
Get extra blades so you always have a sharp tool.

TAPE MEASURE
For the obvious reason, measuring.

PLIERS
Get several sizes for plumbing and mechanical work.

SMALL PRY BAR
For opening doors and windows, and for carpentry.

32 MAINTAIN YOUR PERIMETER

Your home is your castle, and while you may not be able to dig a moat, you can make sure that the exterior is as impenetrable as possible. These seemingly mundane things can make a major difference in a survival situation. After all, when a hurricane strikes, your rain gutters suddenly become vitally important.

33 BE YOUR OWN CHIMNEY SWEEP

Heating fires are responsible for more than a third of all U.S. house fires, and most of them occur due to creosote buildup in the chimney. You should clean out your chimney at least once a year. Set up a tarp around your fireplace and sweep or vacuum up any ash, soot, creosote, or other contaminants. The chimney itself can then be swept out with a long scrubbing brush, usually one with a spiraling head. Various chimney-cleaning solvents are available, or you can use kerosene to help break up the stuff.

ROOFS

Be sure your roof is free of debris, fallen leaves, pine needles, or other plant material. This will help to maintain its structural integrity, keep any decomposing substances from affecting the roof materials, and prevent any flammables from becoming a fire hazard, which is especially important in hot weather or if your property has trees that shed.

GUTTERS

Your gutters shed water from your roof, preventing water damage, but if they fill up with debris they'll be useless. Keep your gutters and downspouts clear of dust, dirt, leaves, and other foreign material.

SIDEWALKS & DRIVEWAYS

Keep all of the concrete perimeters of your home in good working order by treating them with a sealant—one that protects them from the elements and also roughens them up, which helps avoid injuries from slips and falls. If you have any sprouting weeds, apply weed killer or uproot those pesky plants, and fill in any cracks.

WINDOWS & DOORS

Check your doors and windows to ensure they're closing properly and that their locks function smoothly. Check your weather stripping around the bottoms of doors and windows and replace it if it's worn or cracked.

34 KEEP YOUR FORTRESS IN SHAPE

Keeping your residence in working order means more than just doing the dishes and vacuuming the carpet. Your home is a shelter from the elements and an environment meant to keep you healthy by managing heat, atmosphere, water, and waste. If you take care of your home, it'll take care of you in return.

PLUMBING Know how to keep drains, sinks, and toilets open. A good wrench or two and some other tools will help you maintain everything from the bathroom sink to the kitchen U-bend. If you end up springing a leak, know how to shut off the flow to that fixture or, if necessary, the whole house.

HEATING VENTS Air flow for heating and cooling is ducted through your house's vents. Keep your air filters clean to avoid buildup of dust, pollen, or other particles that can impair your home's ventilation, cause allergies, or in some extreme cases, increase the risk of fire.

ELECTRICITY Home electrical repairs are not to be undertaken lightly, as the risk of death or serious injury are very real. That said, you should know the basics, like whether your home has a fuse box or (more likely in modern houses) a circuit breaker box, where it's located, and how to use it. In addition, keep an eye out for frayed wires or other hazards, and have them fixed promptly.

35 STOCK YOUR HOME PLUMBING TOOLBOX

Whether you need to unclog a sink, replace a U-bend, or fix a leaky pipe, here's a short list of tools to help you become your own in-home plumber. (Mustache and overalls not included.)

- CRESCENT WRENCH, MONKEY WRENCH, AND/OR PIPE WRENCH
- BASIN WRENCH
- CHANNEL-LOCK PLIERS
- PROPANE TORCH
- HACKSAW AND/OR PIPE CUTTER
- METAL FILE AND PLUMBER'S TAPE
- PLUNGER
- PLUMBER SNAKE, OR DRAIN AUGER
- PVC CEMENT
- DRAIN CLEANER, LYE, OR BAKING SODA AND VINEGAR

36 CLEAN WITH THE BASICS

With your household properly stocked and maintained, you can potentially keep yourself, your family, and your home safe for years to come. But what about sanitation? Don't waste your valuable pantry and storage space on any chemical cleansers—they're really not that necessary. Here's a list of some far simpler substances that can do just as thorough a job if used properly. As a bonus, they're free of potentially toxic chemicals.

BAKING SODA This old standby does more than just help around the kitchen. It's a mild abrasive, which means you can use it to polish pans, metal, and ceramic fixtures. It's a known odor-fighter, and it can also help soak up spills like ink and oil. Plus, when mixed with vinegar, it can clear drain clogs.

WHITE VINEGAR Aside from pickling foods, the mild acid in vinegar is a proven remover of stains, a de-tarnishing agent, weed killer, fabric softener, and mildew remover, among many other uses.

LEMON JUICE Another good stain remover, like vinegar, the acid in lemon juice can also be used to brighten metals and clean glass and toilets. It's also an insect repellent, a useful remedy for sore throats, and a treatment for the itch caused by plants like poison ivy.

OLIVE OIL A useful polish for wood and a rust guard for steel. Olive oil can also help remove tar stains from clothing, lubricate squeaky hinges, and condition leather.

37 HAVE A FINANCIAL PLAN

Whether the economy gets a little shaky or society totally collapses in the wake of a local (or larger-scale) disaster, you should have a plan for your finances as well as your health and safety. At the least, learning to closely manage your money and funds will help your day-to-day expenses and let you afford the cost of other disaster preparedness or financial hardship. Handling your finances means being able to control and plan for other events, such as disability, retirement, home renovation, and more.

SPEND LESS Live below your means, and you'll have more to spend or save elsewhere. Take a look at your finances and reduce your spending in unnecessary areas, from dining out to entertainment. There's also no shame in buying used instead of new, finding good deals, collecting coupons, or going for bulk discounts.

SAVE UP If you suddenly find yourself without a job, whether due to economic trouble or disaster, you'll still need a way to pay for things. Save a minimum of 10 percent of your gross income, and plan and save for a buffer of at least three months of funds. If you can, look six months ahead. Start with your basics: mortgage or rent, utilities, and food. Go from there to personal supplies, transportation, medical care, more extensive disaster preparedness, and other expenses.

CASH & CARRY It's easier to manage finances if you have less debt. Pay off credit cards, starting with the one with the lowest balance, and renegotiate interest and payment rates if you have a good track record, until you're debt-free. Meanwhile, create a budget that lets you pay for everything with cash or debit, instead of further relying on credit.

38 STASH YOUR CASH

Once you have decided how much money to keep on hand for emergencies, you've got to figure out how and where to keep it. In an ideal world you'd have it all in smaller bills, since in an emergency, shopkeepers are probably going to be cranky about making change for those Benjamins. That said, two grand in twenties is a big wad. Use your best judgment, and store as much of it as is reasonable in smaller bills, then use big bills for the rest of the stash for convenience. And we beg of you, whatever you do, don't hide it under the mattress. That's the first place burglars will look (the second is taped to the back of paintings, in case you were wondering). So, where to put it?

39 KNOW THE RIGHT AMOUNT

In most natural disasters and emergencies, electrical power and computer lines go down for at least a little while. That means that not only are ATMs and card readers down, even if you can get to your bank, they may not be able to call up your account information. So once you've found the right place to squirrel it safely away from thieves and partying teenagers (and yourself—always resist the urge to dip in "just this once"), how much is smart to save?

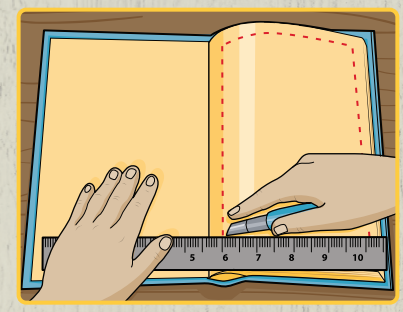
It rarely takes more than a week for utilities to come back on after a storm, flood, or earthquake, so a week's worth of funds is the place to start. Calculate what you'd spend on groceries and emergency supplies (also factor in the fact that price-gouging is more than likely). If authorities order an evacuation, gas and motel costs will come into play. Your needs will vary based on the size of your family, where you live, where you're going, etc., but experts estimate that two thousand dollars should cover those costs, with a little extra on top—just in case.

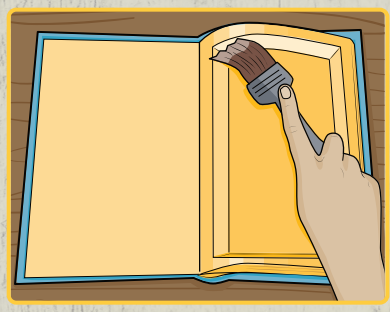
40 SHELTER YOUR FUNDS

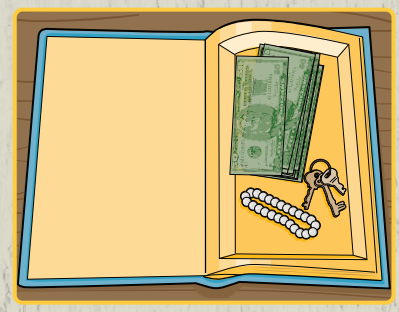
Ready for something a bit more exciting than a savings plan at the local credit union? These options are higher risk but also give better coverage in case of certain potential disasters. Of course, if all the computers go down worldwide, you may have a lot of useless 1s and 0s.

GO OFFSHORE If you have some funds to spare, consider investing in foreign currencies in more economically stable regions of the world, or look into having a bank account outside the country. Just be sure that in the event of an emergency, you'll have a way to access those funds.

GO FOR THE GOLD Precious metals have been used as a medium of exchange for millennia. Buying platinum, gold, or silver by the ounce is a little costly but may ultimately be worth it. Their value has stayed fairly consistent or risen over the years (though not so much, of late), and depending on how you buy them, their worth is measured in either intrinsic value (the cost of the metal itself) or collectible value (if it is in the form of rare coins or memorabilia). Whatever metal you invest in, don't rely on certificates that can be cashed in for metal later; get hold of the stuff itself and store it securely in a place you can access.







BURY TREASURE Go all pirate-style and bury the booty in your yard. Be sure you use an airtight, waterproof container. A common mason jar is a great choice. And don't forget where you buried it!

BOOK IT Ah, the old hollowed-out book trick. Corny as it sounds, if you have a bookcase full of hardcovers, it's not hard to hide your cash among them. Use a sharp blade to carve out a pocket in the midst of the pages, as above. Choose a really boring book so no one pulls it off the shelf and accidentally discovers your stash.

FREEZE YOUR ASSETS If your freezer is packed with foil-wrapped leftovers, it's easy to make one of those packages actually contain money, not mom's meatloaf, as the label suggests. If you have a fairly empty freezer, this is a worse idea, as it may just stand out.

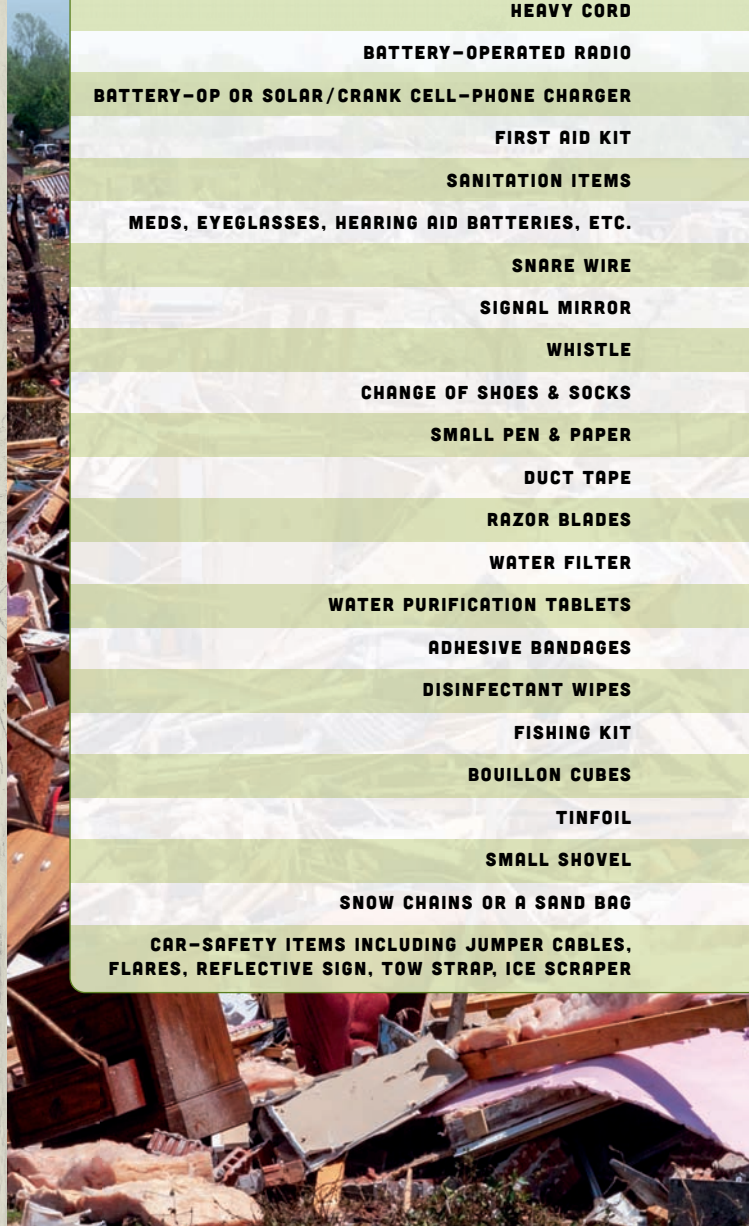
PICTURE THIS Taping cash to the back of pictures is a terrible idea. But if you want to get a little craftier, you can stash currency in between a framed photo or poster and the cardboard backing.

41 PACK A BOB FOR ANY SITUATION

A BOB (Bug-Out Bag) is a collection of goods that you would need to survive if you had to flee your home during an emergency with no guarantee of shelter, food, or water. Think of the BOB as your survival insurance policy for any disaster or mayhem. There may not be one perfect, universally agreed-upon set of equipment, but with a good core set of items (similar to those used in backpacking), you can put together a BOB suited for a wide variety of situations. Most people use either a backpack or a duffle bag as a container for their goods, which should include basic survival essentials and a few irreplaceable items. Fill up your BOB with a minimum of the following things, with most items sealed in zip-top bags to prevent damage:

- Shelter items such as a small tent and sleeping bag, or a tarp and blanket
- A couple quarts (or liters) of drinking water, and purification equipment to disinfect more water
- High-calorie, no-cook foods like protein bars, peanut butter, trail mix, etc.
- First-aid, sanitation, and hygiene supplies
- Several fire-starting devices
- A small pot for boiling water or cooking
- A few basic tools such as a knife, duct tape, rope, etc.
- Extra clothes appropriate for the season
- Flashlight with extra batteries
- Cash
- A digital backup of all your important documents and artifacts. This could be a thumb drive with your bank info, insurance documents, wills, and family photos and videos.

Keep your main BOB safe and ready to go in a secure location, with modified versions in your car and office. It's also a good idea for you to have "everyday carry" (EDC) items—survival essentials that you can carry in your pocket or purse. To the right is a breakdown for these different types of kits.



HIGH-CALORIE, NO-COOK FOODS
BOTTLED WATER
TENT OR TARP
SLEEPING BAG
LIGHTER OR FIRE-STARTING GEAR
CHANGE OF RUGGED CLOTHING
FLASHLIGHT & EXTRA BATTERIES
POCKET KNIFE
CAN OPENER
HEAVY CORD
BATTERY-OPERATED RADIO
BATTERY-OP OR SOLAR/CRANK CELL-PHONE CHARGER
FIRST AID KIT
SANITATION ITEMS
MEDS, EYEGLASSES, HEARING AID BATTERIES, ETC.
SNARE WIRE
SIGNAL MIRROR
WHISTLE
CHANGE OF SHOES & SOCKS
SMALL PEN & PAPER
DUCT TAPE
RAZOR BLADES
WATER FILTER
WATER PURIFICATION TABLETS
ADHESIVE BANDAGES
DISINFECTANT WIPES
FISHING KIT
BOUILLON CUBES
TINFOIL
SMALL SHOVEL
SNOW CHAINS OR A SAND BAG
CAR-SAFETY ITEMS INCLUDING JUMPER CABLES, FLARES, REFLECTIVE SIGN, TOW STRAP, ICE SCRAPER

HOME / CAR	OFFICE	EDC
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42 STOCK A HOME SURVIVAL KIT

One of the first steps toward being prepared for anything is having a multipurpose, day- or week-appropriate survival kit stocked and ready in your home. It's always a good idea to have certain essentials at hand whenever possible—you never know just where you'll be when disaster strikes.

Here are a few essentials that will help meet your needs (and those of your family) in a hunker-down scenario. Store the kit somewhere easy to access, and make sure everyone knows where to find it.

- A THREE-DAY SUPPLY OF NONPERISHABLE FOOD PER PERSON
- SMALL CAMPING STOVE
- KITCHEN TOOLS, INCLUDING A CAN OPENER
- A THREE-DAY SUPPLY OF WATER—THAT'S 1 GALLON (3.75 L) PER PERSON, PER DAY
- WATER-PURIFICATION TABLETS
- BLEACH (A MILD DISINFECTANT WITH WATER, OR PURIFIER IN THE RIGHT AMOUNTS)
- PORTABLE, BATTERY-POWERED RADIO/TV AND EXTRA BATTERIES
- FLASHLIGHT AND EXTRA BATTERIES
- BATTERY-OPERATED, HAND-CRANKED, OR SOLAR-POWERED CELL-PHONE CHARGER

43 GET THE TOOLS FOR YOUR CAR

You can't do the job if you don't have the right tools. Stock up your vehicle like a rolling warehouse with these tools and supplies to help you tackle an unexpected roadside emergency.

JUMPER CABLES

A heavy-gauge set of good jumper cables and a second vehicle can get your car running if the battery is flat.

TOW STRAP

A nylon tow strap can get your car or truck out of a ditch or snow bank if there is another vehicle to pull you out. Select a heavy strap with no metal parts.

REFLECTIVE SIGN

Flares will only last so long, so keep a back-up distress signal such as a reflective sign. Get one that is freestanding and heavy.

WATER

For your drinking water and for radiator fill-ups, keep several gallons of water in your ride. Keep more than that if you live in or travel through a dry climate.

FIX-A-FLAT

This can of tire-mending spray is able to seal up small holes in a flat tire, and reinflate the tire enough to get you to a repair shop.

TIRE PLUG KIT

A tire plug kit consists of glue, a few tools, and some rubber/fiber strips. Use one rubber strip for little holes, and the whole bundle if there is a gaping hole.

DUCT TAPE

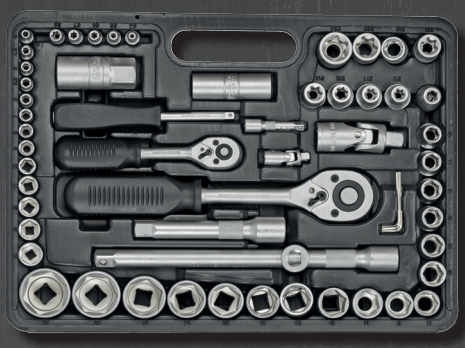
Purchase automotive duct tape as it is more resistant to heat and UV light. You can use it to fix or secure almost anything in your ailing vehicle.

WRENCHES & PLIERS

Adjustable wrenches can be lifesavers when you're working on a vehicle. Keep a few sizes of pliers in your vehicle, in case you have to pull a nail out of a tire, fix battery terminals, or mend a major breakdown.

HAMMER

Possibly the greatest simple tool ever devised, a hammer can be useful for many car repairs and related work. It can also pass for a weapon.



SOCKET SET

Simple repairs, as well as the more complex ones, will require a socket set. If you're going this far, go all the way and buy a set that has both standard (imperial) sockets and metric sockets.

FLASHLIGHT WITH SPARE BATTERIES

It gets dark underneath your vehicle, and even darker at night. Keep a flashlight or two, plus some extra batteries, in the vehicle at all times.

NONPERISHABLE FOOD

If you get stranded for a long time, a food supply can provide you with energy and a morale boost. Rotate this food often, and plan according to the seasons.

FULL-SIZE SPARE

Don't just settle for one of those dinky little emergency tires. Get a full-size spare for your vehicle, and include it when you're rotating your tires for better wear.

FIRST AID

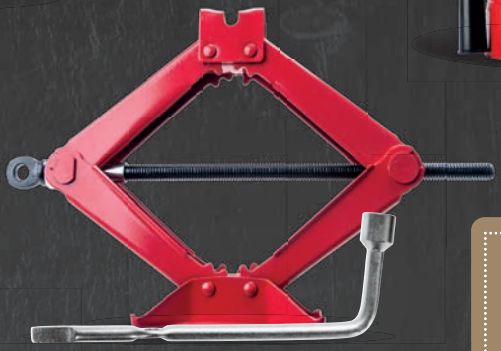
Sometimes the vehicle needs repairs; sometimes a person needs to be patched up too. A good first aid kit will serve you well.

FIRE EXTINGUISHER

Small fires in a vehicle can be put out by unloading a fire extinguisher at their base, but if you think that gasoline is involved in the fire, don't stay close to danger. Run away!

BLANKETS OR SLEEPING BAGS

Ideally, you should have one for each seat in your vehicle. This will cover every passenger and the driver, in the event of a cold-weather breakdown.



TIRE IRON & JACK

The tire iron will be needed to break loose the nuts that hold a tire in place. The jack will be needed to raise and lower the vehicle to complete a tire change or other repairs.

MAPS

Good, old-fashioned paper maps can be a lifesaver when you are lost. Keep a set of maps for your home state and other areas that you may travel through frequently.

TOP TIP

Let the other drivers know you are there by signaling with road flares. Some flares will burn for up to 30 minutes. The old-fashioned kind also make great fire starters in severe weather conditions.

44 BE YOUR OWN MECHANIC

You don't need to be an ASE Certified mechanic to perform some basic vehicle care and repair, but now that you have a full set of tools, you should know how to use them. Start by getting a repair manual for your specific make and model of vehicle. This will provide detailed information for both diagnostics and part replacement. With your guidebook in hand, you'll have the guidance to tackle some basic jobs. Start off easy, by checking all of the vehicle fluids and topping them off (only if needed). Since your tires are the interface between the vehicle and the road, give them a good inspection (checking tire pressure, checking for damage, and even rotating them for more even wear). Swapping out worn or torn windshield wipers is a great idea and a fairly easy task. You could then move up to oil and filter changes, and so on. With great care, you might even start replacing your own brake pads and performing other serious work. Keep in mind that there is a big difference between light bulb replacements and changing the brake pads. If you don't install a tail light correctly, you'll get a traffic ticket. If you don't install the brake pads correctly, people could die.

45 FIGURE OUT HOW MUCH WATER YOU'LL NEED

Survival guides will tell you to store enough water for a week or more, but how do you know what that means? Look at the figures below, then multiply the daily numbers by 14 for adults, children, elderly, infants, and the sick or wounded to calculate your family's water storage requirements for a two-week emergency.

ACTIVITY LEVEL ▶	BARE BONES	SOME ACTIVITY	DRY CLIMATE OR VERY ACTIVE	DRY CLIMATE AND VERY ACTIVE
ILL, BURNED, OR WOUNDED ADULT	2 GAL (8 L)	3 GAL (11 L)	4 GAL (15 L)	5 GAL (19 L)
AVERAGE ADULT	1 GAL (4 L)	1.5 GAL (6 L)	2 GAL (8 L)	3 GAL (11 L)
CHILDREN & ELDERLY	.75 GAL (3 L)	1 GAL (4 L)	2 GAL (8 L)	2 GAL (8 L)
INFANTS	.5 GAL (2 L)	1 GAL (4 L)	1.5 GAL (6 L)	2 GAL (8 L)

46 HOLD YOUR WATER

Water is a top survival priority, so get the right containers to fulfill this necessity.

GALLON JUGS Glass wine jugs or juice jugs can be a nice choice for household storage—until you break them. Plastic 1-gallon (4-l) water jugs are more resistant to breakage, but they are vulnerable to leakage and chewing rodents. Don't reuse milk and juice jugs, as they're hard to sanitize and often grow more bacteria.

WATERBOB This 100-gallon (400-l) water bladder can be laid in a bathtub and filled from the tub's faucet in 20 minutes. It's a great thing to deploy if you know that trouble is coming, such as a hurricane heading for you.

SODA BOTTLES It's totally okay to use reclaimed 2-liter soda bottles. Make sure the containers are stamped with HDPE (high-density polyethylene) and coded with the recycle symbol and a number 2 inside. HDPE containers are FDA-approved for food and water storage.

WATER COOLER JUGS
The Holy Grail of water containers, the 5-gallon (19-l) jug can hold a lot of water and stay portable. Buy them factory-filled; they'll be safe to drink for a year or more.

55-GALLON (210-L) DRUMS Designed specifically for water storage, these big blue monsters will hold a week's worth of water or more. But they can be difficult to transport if you have to move them when full. Make sure it's a food-grade water barrel. Other barrels may create chemical interactions between the water and the plastic.

47 THINK OUTSIDE THE SINK

It doesn't take much to disrupt municipal water—earthquakes can break pipes, floods can overwhelm the system, and so forth. And sometimes it takes the city a while to get the taps back on. If the water stops flowing to your home, you do have a few options to consider before you start sucking on your last ice cubes. There's abundant water hidden in the average dwelling, if you know where to look for it.

THE TOILET TANK To clarify, we are talking about the tank, not the toilet bowl. The tank of every toilet has a gallon (4 l) or more of perfectly clean water in it.

THE PIPES Even in a utility outage, water can be found lying in the pipes. Open the highest faucet in the house, then open the lowest faucet or spigot, catching the water in some clean containers.

THE HOT WATER HEATER You may find 40 to 80 gallons (150 to 300 l) of drinkable water by opening the drain valve at the bottom of the unit and catching the water in a pan. Use this water soon, as the water heater is a bacterial breeding ground.

THE FISH TANK A freshwater fish tank can be claimed as a water source, along with koi ponds, fountains, and other water features. Treat this water with chemicals or by boiling for 10 minutes.

THE GUTTERS The gutter system on your home can provide many gallons of water from just a light rain shower. Divert your downspouts into rain barrels or other large containers.

48 BANISH BACTERIA

If you have a clear glass or plastic bottle, some water, and a sunny day, you can use the sun's light to make your water much safer to drink. Largely advocated for developing countries, solar water disinfection is gaining some traction in the survival-skills crowd; and it's a great fit for equatorial countries with abundant strong sunlight but few other resources.

The most common solar disinfection technique is to expose clear plastic bottles full of questionable water to the sun for a minimum of one day. The sun's abundant UV light kills or damages almost all biological hazards in the water. This method has many advantages: It's easy to use; it's inexpensive or free; and it offers good (but not complete) bacterial and viral disinfection.

There are some problems, though. You need sunny weather (or two days of overcast sky) to reach the maximum effectiveness. You cannot use it in rainy weather. It offers no residual disinfection. It may be less effective against bacterial spores and the cyst stages of some parasites. Both the water and the bottle need to be very clear. And finally, it only works with bottles that are 2 liters (0.5 gallons) or smaller. It isn't 100 percent effective, but it's still a lot better than taking your chances by drinking raw water.

As unlikely as this may sound, you can actually disinfect your drinking water safely and effectively with common household items. Just be aware that chemical disinfection doesn't remove salt, toxins, or fallout—it just kills the living pathogens that would make you sick.

FILTER Any water you get from a rain barrel, your pool, or a nearby creek should be considered contaminated and in need of disinfection. Water that is visibly dirty or muddy should be filtered through a coffee filter or a cloth. This won't make it safe to drink, but it will help the disinfection methods to work more effectively.

CHLORINE BLEACH Add 2–4 drops of ordinary chlorine bleach per quart (or liter) of water. Use 2 drops if the water is warm and clear. Go to 4 drops if it is very cold or murky. Put the bottle cap back on and shake the container for a minute. Then turn the bottle upside down and unscrew the cap a turn or two. Let a small amount of water flow out to clean the bottle threads and cap. Screw the lid back on tight, and wipe the exterior of the bottle to get the chlorine on all surfaces. Let it sit for one hour in a dark place and it will be ready to drink.

TINCTURE OF IODINE Use 5–10 drops of tincture of iodine 2% in one quart (or liter) of water. Flush the threads, wipe down the bottle, and allow it to sit in the shade one hour, as with chlorine. Use 5 drops tincture of iodine for clear warm water, and up to 10 drops for the cold or cloudy variety of water.

POVIDONE IODINE You'll need 8–16 drops per quart (or liter) of water with this form of iodine. Add 8 drops for nice-looking water and 16 drops for swamp water. Clean the bottle threads, and wait an hour, as with the other methods.

49 SHOP SMART

Get 10 different survival experts together and you'll hear at least 10 different ideas to fill the perfect survival pantry. Factors include what emergency you're preparing for (earthquake? economic crash? the end times?), how many folks you need to feed, and what you like. Your postapocalyptic pantry shouldn't be all beer and cheese puffs (although the latter are great fire starters), nor do you want to spend weeks, months, or years gnawing on hardtack and tofu jerky. A good pantry plan balances out storability, nutrition, and taste. The following pages have a few checklists to get you started.

You'll probably want to make your first trip to one of the big warehouse stores, since they tend to stock large bulk packages and have great prices. However, selection can be spotty. So, in order to fill in the gaps, look online and in specialty stores for additional items to round out your supplies.

A lot of people get superexcited about prepping and feel like they need to stock up on everything immediately. It makes more sense to build your stash a bit at a time, being sure to get what you really want and need, rather than what's on sale this week at the MegaloMart.

50 START WITH THE BASICS

It's debatable what's absolutely essential for your survival pantry, and what's a "nice to have," or even a "you stocked up on what?" Here are some pretty inarguable staples everyone should at least consider.

SALT It makes your food taste better, helps you preserve meats, and lasts pretty much forever. Almost all salt sold commercially is iodized—but check just to be sure. You need that iodine for thyroid health.

BAKING POWDER This pantry essential is used in cooking, but it's also good for cleaning, deodorizing, or other household chores.

FATS & OILS Tubs of solid vegetable shortening have fairly long shelf lives. Olive oil is healthy and versatile but tends to go bad more quickly, so buy it in smaller bottles and open as needed. Coconut oil is a surprising favorite.

SUGAR & OTHER SWEETS White sugar can be stored for a very long period if packaged right. Honey and molasses are also good to have on hand for cooking and for livening up oatmeal and the like.

BEANS Sure, beans and rice are practically a prepper cliché, but most clichés exist for a reason. Dried, beans can last for up to 30 years, they're full of nutrients, and when cooked right, they're really pretty tasty.

RICE Like beans, rice is one of those go-to staples that has kept large portions of this planet's population alive through good times and bad. Combine with beans to boost nutrients.

VITAMINS No matter how well your pantry is stocked, you may not get the variety that would be ideal in your diet. Supplement with a good multipurpose vitamin and mineral pill just to be sure.

CANNED GOODS Stock up on a good selection of fruits and vegetables—choose whatever you and your family like best, but be sure to get a variety for extra nutrition and to prevent boredom if you're eating out of your stockpiles for a while.

COFFEE AND/OR TEA Some people might class these beverages under luxuries, not essentials, but those people have never seen an addict at 6 a.m. without caffeine. Even if you're not a giant fan of coffee, it can be a fantastic trade good, so you should stock at least a few cans just in case.

DRIED FRUIT A great way to store fruit for the long-term, and a fantastic source of concentrated nutrition. A handful of raisins can sweeten your morning cereal, and some dried apricots make a nice portable source of energy. Buy them in bulk or make your own.

51 POWER UP WITH PROTEIN

Protein is absolutely essential to your everyday health, and many of us already eat less than we should . . . even without the additional stress of trying to survive heavy weather or other challenges. Here are some key protein sources to keep on hand.

HARD CHEESE

In Europe, people stash cheeses for months or even years inside cool, dark caves. The secret? A good coating of wax. It's not easy to find hard, waxed cheeses in the United States, but they are available, and the little search to find a wax-clad wheel of Parmesan will be worth it in 10 years' time when you grate it on your postapocalyptic pasta.

CANNED & DRIED FISH

Stock your pantry with canned tuna and salmon, as well as surprisingly versatile sardines. All fish are a great source of omega-3 fatty acids, and any fish that has tiny, edible bones, such as kippers, also provides a good dose of calcium.

JERKY

Dried meat or fish is close to 100 percent protein, and it lasts a long, long time (Native Americans and other cultures made jerky for long-term use and for easier transport). Buy all-natural products that have fewer additives—the same stuff that keeps it "moist" also makes it spoil more quickly. You can also make your own.

DEHYDRATED MILK

It's nutritious and long-lasting when nitrogen-packaged, and can be used in cooking or to add to that coffee you hoarded. You did remember to hoard the coffee, didn't you?

WHEY PROTEIN

Protein powder isn't just for gym rats! It has a long shelf life and a very high protein content—a small scoop can have as much protein as a whole steak. Stir into water or milk for a high-protein, on-the-go meal replacement.

NUTS & NUT BUTTERS

Nuts can go bad relatively quickly, but they're a good source of protein, healthy fats, and calories, so it makes sense to have some on hand. Buy peanut butter in smaller jars so you only have to open and use as needed.

52 GO CARB CRAZY

The modern fear of carbs is just that . . . modern. For most of history, humans have relied on starchy foods for energy, comfort, and nutrients. The All Grapefruit Supermodel Diet has no place in a disaster situation.

WHOLE-WHEAT FLOUR
Whole-grain flour does spoil more quickly than the white stuff, but it also has a lot more nutrients. Store it carefully.

DRIED CORN
This American Indian staple has a very long shelf life and can be ground up to make grits, polenta, and cornbread. Or if you want to get really old-school, look into making masa harina (or just buy some premade for your pantry). This corn flour processed with lime is used to make nutritious corn tortillas.

CRACKERS
You don't get a lot of nutrition from crackers, but they have a long shelf life, are easy to eat, and can be a good snack for kids (or grown-ups!) who need some sense of normalcy in a tough situation. Never underestimate the calming power of peanut butter and saltines!

PASTA & NOODLES
Dried pasta lasts virtually forever and, if you buy the fortified kind, can be a source of some vitamins as well. Ramen noodles aren't terribly good for you, but they're easy to cook and can be a nice comfort food.

OATMEAL
Buy the whole, steel-cut oats and you have a versatile staple that can be cooked up for breakfast or used in baking to add nutrients and fiber.

53 GET THE RIGHT FATS

In a world of low fat foods, we sometimes get the idea that all fat is bad, but that's not the case. Along with carbs and protein, the third major element in our diet is fats. The right fats are not bad for us, but we do need to know which ones we should have. It also helps to know how to properly stock and care for them so they don't go rancid before their time. Coconut oil is my favorite "food storage" fat. Sealed containers of this white pasty goop (which is solid at room temperature) can last for several years before going rancid (while most fats go bad within one year). Coconut oil is a great source of calories and medium-chain triglycerides (MCTs). These fatty acids can help our bodies to burn fat, provide quick energy for the brain, raise good cholesterol, and support your heart. Olive oil and ghee (clarified butter oil) are also long lived, though not as long lasting as coconut oil. Even cheap liquid vegetable oils can have a place in your food stash, as long as you rotate them out and bring in fresh product once every 6–12 months. Store all fats in the coolest, darkest storage space you have.

54 GAUGE YOUR CALORIC NEEDS

I wish it were this simple, but the USDA model of "2,000 calories a day" doesn't work for everyone in every situation. When it comes to feeding yourself and others, you'll have to take into account many factors. Age, sex, and metabolism have a great bearing on someone's caloric needs. Activity levels and environmental stresses (like cold and heat) will also impact the amount of calories you'd need.

For example, it would not be unusual for an inactive person to require several extra thousand calories per day when they are exposed to intense cold temperatures. Even when bundled up, the cold air they are breathing will chill their body's core temperature and the only thing the body can do to counter this (besides shivering) is to burn more calories for warmth.

While there's no way to predict exactly how many calories a person will need for an unknown length of time (during a crisis, for example) and for an unknown workload, we can err on the side of caution and stock up more than we think we'll need. Then, if your loosening belt suggests that you need more food to fuel your activity, you'll have that food in reserve.

55 KNOW YOUR AMINOS

Carbs are easy to find in survival food storage. Buckets full of rice and flour will give you all the carbs you'd need. Fats are also easy to grab on your next trip to the store. If you don't mind rotating your stockpile regularly, nuts and seeds can provide valuable fat calories. A large jug of olive oil or some other high quality fat is even more valuable, providing thousands of fat calories per container.

By contrast,proteins are sometimes a problem to acquire and store (especially when planning meat as part of your long-term storage plan). Here's where we can catch a break. Protein isn't just found just in meat sources. By combining incomplete plant proteins from different sources, we can cobble together the full amino acid profile (which makes a complete protein). There are nine essential amino acids that we can only get through food: histidine, isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan, and valine. We can get these by combining rice and beans together in the same meal. We could also combine bean soup with crackers, pasta with peas, whole wheat bread with peanut butter, and lentils with almonds, and by eating hummus (which is made from chickpeas and sesame seed tahini).

56 MONITOR YOUR MACROS

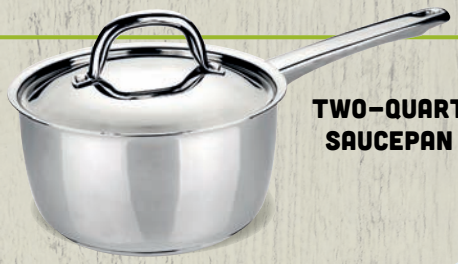
There are three main fuels for the human body: fat, carbohydrates, and protein. These are called macro nutrients and they're not equal in value. Fats provide us with 9 calories per gram. Carbohydrates and proteins only provide 4 calories per gram. Our calorie needs can vary wildly, but the general requirement for women can range from 1,600 to 2,400 calories each day, while men require 2,000 to 3,000 calories daily. It is possible to subsist for short periods of time on only one type of macronutrient (just eating protein, for example), but negative health issues will always arise and prove our need for all three of these nutrients. Our bodies are built to function best on this blend of fuels. To this end, we have a built-in system that inspires a diversified diet. It's nicknamed "palate fatigue"—the feeling of repulsion for a food we eat too often. When a food loses all appeal, it's often a result of our bodies telling us to switch over to something else.

57 WATCH YOUR MICROS, TOO

There seems to be some kind of disconnect between the concepts of "survival food" and "healthy food" in the preparedness community. If it's for survival, the healthfulness of a food is sometimes ignored. The food is just a source of calories to stave off death and it could come in any form (even junk food). Fortunately, there are many long-lasting foods that bring calories, fiber, and micronutrients to the party. Micronutrients are another necessary requirement for the human body and we know them more commonly as minerals and vitamins. Some of the most critical micronutrients are vitamins A, C, D, E, and K; the B vitamins; calcium; iron; zinc; and chromium. These can come from our food supply, or from a multivitamin supplement product (a great thing to add to your food storage stockpile).

58 STOCK YOUR KITCHEN

Self-sufficiency should be happening in every room of your home, even in the kitchen. For talented (or at least enthusiastic) home cooks, you probably already know what you need (and don't need) to cook meals from scratch. For those who are adding "home cooking" to their developing skills, here are a few of the basic cookware items and supplies that you should have when getting started.



TWO-QUART SAUCEPAN

10-INCH SAUTÉ PAN

EIGHT-QUART STOCKPOT

COOKING VESSELS The three most foundational cooking vessels to start your collection are a two-quart saucepan, a 10-inch sauté pan, and an eight-quart stockpot. These will cover most cooking tasks, and if they are high-quality, they will last for a very long time. I also use non-stick baking sheets quite often, and I use a cutting board every day.

59 PREVENT A FIERY DISASTER

Kitchen fires happen more often than we think. They're actually the number one reason for house fires. The most common scenario involves a cooking mishap. There are many things we can do to prevent them.

- Don't walk away from your kitchen when cooking (especially when cooking in oil or using the oven at high heat).
- Wipe up greasy spills and keep your stove clean. Grease is flammable and it can quickly ignite next to a hot burner. It also helps to prevent those spills in the first place, so don't overfill pots and pans with oil or greasy food.
- Keep dish towels, pot mitts, food packaging, and paper towels away from the stove.
- Unplug small electric appliances when you're not using them.
- Keep things clean and in good order. That crumb tray in the bottom of your toaster should be emptied periodically (yes, there's a tray under there that you should be cleaning out).
- Keep a working smoke detector near the kitchen (but not right over the stove, since it would go off constantly from normal cooking activity).
- Never use metal in the microwave or get too experimental with your appliances. I once lit my toaster ablaze by seeing if it could toast hard taco shells.

KNIVES AND UTENSILS Of course, you'll need an assortment of knives for processing your food, but a large kitchen knife and a small paring knife should handle most jobs. Spoons for stirring and serving are vital, as are whisks and spatulas.

CLEANING SUPPLIES Don't forget the cleaning supplies. Sponges, gloves, various cleansers, and a broom and mop for the floor will get you pretty far in the kitchen game.

60 PUT OUT A KITCHEN FIRE

Despite our best efforts at fire prevention, the threat of a kitchen fire in our homes will never be zero. It's always possible that a faulty stove pilot light or some bad wiring will ignite a blaze. That's why we told you to keep a fire extinguisher near the kitchen. This should be a Class-K home/kitchen extinguisher, which is designed for grease fires and similar blazes. Aim the stream of fire retardant spray at the base of the fire and sweep it from side to side. Don't aim at the flames—they're hot but they aren't the source of the fire. It's the fuel at the base of the fire that we need to knock out. If the extinguisher isn't an option, you may still be able to put out small fires by dropping a large metal lid over the fiery pan or stovetop. You could also fling baking soda or a towel over smaller fires to suffocate them. If any of these tactics fail, flee the kitchen and call 911 immediately. What you never want to do is throw water or flour on a cooking fire. The water will splash the burning grease onto new surfaces (with explosive results). Flour is even worse, acting as an additional fuel and creating a fireball in the air.

61 KEEP YOUR SPACE CLEAN

I know that "housekeeping" isn't exactly the pulse-pounding topic that you'd expect to see in a self-reliance book, but it's still something we need to consider. Floor mopping and toilet scrubbing aren't on the normal list of survival priorities, but they are necessary to keep your living space hygienic, healthy, and safe. Whether you're in a big city apartment or a backwoods cabin, you shouldn't neglect your housework. The amount of necessary cleaning will vary greatly based on the inhabitants. With a small number of tidy people under one roof, the work load isn't that bad. With a big family that has kids and pets, the need for cleaning never seems to end. If you have the time, home spaces like living rooms and bedrooms can be straightened up daily but they don't need to be "deep cleaned" very often. Spaces like kitchens and bathrooms, on the other hand, should be cleaned frequently. Due to the bacteria and germs that can grow in these two high traffic locations, you should clean and disinfect floors, countertops, door knobs, and other solid surfaces every few days under normal conditions. With a sick family member or a crowded house, you could bump this up to a daily cleaning.

No, housecleaning isn't as cool as growing a garden or building a doomsday survival kit, but sometimes it's the little things that make all the difference. That one drop of raw chicken juice on your countertop may be the one that sickens your child, and that's why the counters need cleaning. Every time you flush the toilet, you send up a plume of microbes into the air from one of the most germ-ridden fixtures in your home, and that's why the bathroom needs cleaning. By keeping your home cleaner, you're keeping it safer (and that's in line with the core of survival and self-reliance).

62 HANDLE YOUR OWN HYGIENE

Even fastidious adults can fall behind on self-care at times, but we should all be ready, willing, and able to engage in personal maintenance during emergencies. In fact, I'd say it's more important than most people would imagine. By keeping your body clean, you have a greater chance of staying healthy in adversity. In certain crisis settings, you may still have all utilities operating. This could be a real "silver lining" to the situation, as you'd be able to maintain your normal daily bathing and hygiene rituals. In settings where you might have running water (but no utilities to heat it), cold showers can still keep a person's body clean and it will likely conserve water (as few people can tolerate a long cold shower). For those who just can't stand a cold shower, you could warm up a pot of water and take a bath with a washcloth and soap. Your hands, feet, and nether regions will be the most important places to wash, as skin infections and other health issues can arise when you allow these places to become filthy and stay that way, especially in damp or wet clothing and footwear. After you've washed yourself, you may even want to wash your clothes. While doing the laundry may seem unimportant when compared to other issues, it's actually a big deal. Our clothing will last longer if it is routinely washed and we'll reduce our risk of skin infections and other maladies (we'll smell better, too). In a bucket of warm, soapy water, you could scrub articles of clothing against themselves to remove dirt and oil. Rinse them well with fresh water and hang them to dry in a sunny place or near a heat source.

63 BUILD A BUCKET COMMODE

Whether you're trapped in an elevator with a full bladder or you're suffering through a long drive home from a distant and greasy restaurant, you'll be left with the same high-pressure question: can I hold it? A bathroom emergency is no joke and it's certainly no laughing matter in an emergency. If you're wondering how you can flush a toilet during a water outage, worry not. One gallon of water (and it doesn't have to be clean drinking water) can be poured directly into the toilet bowl for a tolerable flush. When there is no bathroom or you can't spare the water, that's when we should fall back on our stockpile of supplies. A five gallon bucket, a tight fitting bucket lid, some trash bags with twist ties, a little duct tape, and a permanent marker can be the basis of an emergency bucket toilet that suits many disaster settings. Place one trash bag inside the bucket and tape the edge of the bag opening to the side of the bucket. Add a second layer by inserting and taping down a second bag. For comfort, place some foam pipe insulation around the rim of the bucket or buy a special bucket toilet seat from a disaster supply store. Replace the bucket lid after each use. When the bucket is about half-full, tie up the inner bag and outer bag. Seal the knot with duct tape and write "Human Waste" on the duct tape with a marker. Place bags out of the way and out of sunlight until you can properly dispose of them. To enhance your bucket toilet set-up, a little bleach can be splashed into the bucket for odor control and some cat litter can be tossed in to absorb moisture. And while you're stocking up on your supplies, make sure you buy a mountain of toilet paper and baby wipes to complete your waste disposal system.

64 BUILD YOUR FIRST AID KIT

If you're the type of person who's always asking for a bandage or aspirin, it's time to get it together. Create a kit that includes the following items.

ANTIBACTERIAL OINTMENT

NON-STICK DRESSINGS

ADHESIVE BANDAGES, INCLUDING BUTTERFLY STRIPS

TWEEZERS

SURGICAL SCRUB BRUSH

MEDICAL SHEARS (A.K.A. EMT SCISSORS)

MEDICAL TAPE

ARM SLING

SPLINT MATERIALS (INFLATABLE OR RIGID WOOD/PLASTIC)

ELASTIC ROLLER BANDAGES

GAUZE ROLLER BANDAGES

STERILE COMPRESS

If you've got the know-how (perhaps with EMS or some other medical training) you might add these to your medical supplies. Some "jump bags" are even prepacked with these items—and many more.

BLOOD PRESSURE CUFF

PENLIGHT

WILDERNESS/ TRAVEL MEDICINE GUIDEBOOK

ACTIVATED CHARCOAL
For ingested poisons.

CPR MASK

TRAUMA PADS
Some even help speed blood clotting.

TOURNIQUET RUBBER STRIPS

EPIPENS
For anaphylactic allergic reactions.

NORMAL SALINE
For rinsing injuries.

ORAL GLUCOSE TUBES
For diabetic emergencies.

DISINFECTANT TOWELETTES

ALOE VERA GEL

ANTI-INFLAMMATORY DRUGS

CHEMICAL HOT AND COLD PACKS

NITRILE OR LATEX GLOVES

STETHOSCOPE

65 IMPROVISE MEDICAL SUPPLIES

In an emergency, you may not have all supplies you need. If you're forced to make do with the materials at hand, these are some DIY options.

BUTTERFLY STRIPS Small pieces of duct tape can be snipped with scissors to create butterfly dressings to hold cuts closed. Snip them twice on each of the long sides, and fold the middle under to create a non-stick section that would float over the laceration.

DRESSINGS Although they are not sterile, feminine hygiene pads can provide you with a decent wound dressing. Tampons are a bit more sterile, and they can be laid sideways on a wound. Strap down any of these dressings with clean cloth strips, tape, or any other binding you have at hand.

INSECT STING RELIEF Meat tenderizer is made of enzymes that break down steak proteins—and those found in venom! Mix the tenderizer with water to make a paste and apply it directly to the sting. It won't help a rattlesnake bite, but it can relieve the pain of wasp, scorpion, and ant stings.

SPLINTS Splints are one of the easier bits of medical gear to improvise. Your goal is immobilization, which can be achieved with any number of rigid items and binding materials, such as a board and some duct tape. Make sure you stuff adequate padding inside the splint to properly stabilize the limb and ease your patient's pain—use crumpled toilet paper or newspaper, spare clothing, or anything else that works.

BURN GEL Smear a light coating of toothpaste onto the dressing for a burn wound and then apply. It's simple and effective.

DISINFECTANT Keep infections at bay by putting hand sanitizer or straight liquor onto topical wounds. Yes, it will hurt, but it's better to hurt now and heal than to let a wound become infected, which will result in a lot more pain later.

66 LEVEL UP

Remember, the first step in taking care of injuries is knowing what supplies to use and how to use them properly. This is the baseline level of what any well-prepared person should know. To take your knowledge to the next level, there are no shortage of first-responder and first-aid courses and books available. You can also inquire with your local Red Cross for information on classes.

First-aid and first-responder courses are just the beginning. Your local college may offer EMS classes lasting from a few weeks of accelerated training to a few months of intermittent sessions that you can fit into your schedule. These classes will prepare you to acquire an EMT license.

67 ASSESS & CONTROL BLEEDING

Diagnosing the type of blood flow coming from a wounded person will help you determine the severity of his or her injuries and how to treat them. Always handle the most serious injuries first.

OOZING BLOOD Scrapes, scratches, or abrasions that open capillaries result in oozing blood. Infection is the biggest worry here, since the skin, which is the body's first layer of defense, is damaged. Clean and disinfect the wound, then apply antibiotic ointment and dressings, and change the dressings daily. Look for infection, which may need skilled treatment.

FLOWING BLOOD If blood flows, it's the result of damage to a vein. Elevate the injury above the heart, clean any debris from the wound if possible, and apply direct pressure. Add more bandages as needed and, once the bleeding stops, secure dressings to the wound. You may need to find more skilled medical care for further treatment.

SPURTING BLOOD If blood is bright red and spurts, it comes from an arterial injury and is immediately life-threatening. Elevate the injury, apply direct pressure, and add more bandages if they soak through. If needed, locate and apply pressure to the nearest arterial pressure point. If the bleeding won't stop, use a tourniquet to cut off blood flow (but be aware that this increases the risk that an amputation will be necessary, and should therefore be an option only in cases of arterial bleeding). Seek medical care immediately.

INTERNAL BLEEDING When an organ or vessel inside the body has been injured, blood can fill the spaces inside the body. The injured person may go into shock, become confused due to low blood flow, or have decreased fluid (urine and sweat) output. Incline the victim with the injured area raised to restrict blood flow, and he or she should be treated for shock. Again, seek medical care immediately.

68 BANDAGE A WOUND

Skin takes up to 72 hours to seal after an injury. Small cuts and scrapes just need to be kept clean, but larger cuts will need more care.

Unless you have proper sutures and surgical needle, don't stitch the wound. Line up the edges of the cut and place adhesive butterfly strips in a criss-cross pattern down the length of the wound. Dress with sterile wrappings.

At a pinch, you can also use superglue (which was first tested as a wound sealant in the Vietnam War). Coat only the outside of the cut's edges, not inside the cut itself.

69 DISINFECT A WOUND

Knowing how to disinfect wounds can be vital—even small cuts can get infected. And if your body's fighting off an infection, it has fewer resources to provide for your overall health.

STEP 1 Stop the bleeding and assess the injury. If it won't stop bleeding or it's deep and needs stitches, get professional medical help.

STEP 2 Flush the wound with clean water or saline. Avoid peroxide or alcohol, which can actually damage healthy tissues.

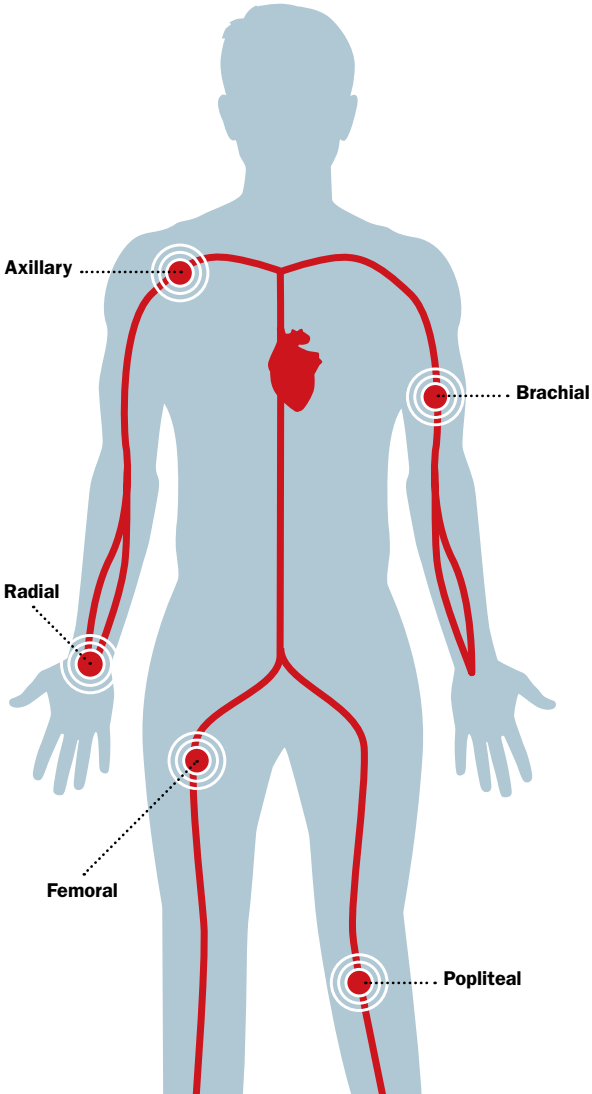
STEP 3 Cover the wound with antibiotic ointment and apply dressings to keep out dirt and debris.

70 APPLY SOME PRESSURE

With no first aid kit, medical care becomes a lot more difficult. A lack of clean dressings or antibiotic products is a sure recipe for infection. Still, medical aid can be rendered if you have a working knowledge of the skills.

You can diagnose ailments like heat exhaustion and dehydration without supplies, and identify pressure points to slow bleeding. If severe bleeding does not stop with direct pressure and elevation, switch tactics and apply direct pressure to the right artery.

When you apply pressure to an artery, you stop bleeding by pushing the artery against bone. There are specific major arteries in the body where pressure should be placed (see below). Press down firmly on the artery between the bleeding site and the heart, closer to the heart. After bleeding stops, do not continue to apply pressure to an artery for longer than 5 minutes.



71 TIE A TOURNIQUET

There are progressive steps for controlling bleeding. Cover the injury with a dressing, elevate the wound above the heart, apply direct pressure, and use arterial pressure points. But if the injury is so severe that those methods aren't stemming the flow of blood, it's time to consider using a tourniquet. The victim may lose the use of a body part due to lack of circulation, so this is a last resort to save life at the expense of limb.

Use a strong, broad, flexible object, such as a rolled-up shirt, thick cord, rope, or belt. It should not be so thin as to cut into tissue and cause further injury or bleeding. Ideally, you should be trained in using a tourniquet, and you should get the victim's permission (in writing if at all possible).

Wrap the tourniquet around the limb as close to the injury as possible, and tie it off as tightly as you can. Alternatively, you can tie the tourniquet around the limb in a loose loop, then tie a handle such as a short, strong stick inside the knot of the loop. Turn the handle several times to twist and tighten.

Whatever method you use, you should secure the tourniquet so that it does not come unwound. If possible, dress and bandage the wound, mark the victim's forehead with a "T" and the time the tourniquet was applied to alert the pros, then get the victim to medical care as soon as possible.

72 CHECK ABCs

In an emergency situation, you might just save somebody's life if you know your ABCs. This is the way to check a person's vital signs to see if they have entered into cardiac arrest. "A" stands for Airways. If the person is unresponsive, the first thing you need to do is to make sure that their airways are not obstructed. "B" is Breathing. Once the airways are open, you need to check if they are breathing normally. Finally, "C" stands for Circulation. Is there a pulse and is it in the normal range?

If you have checked the ABCs, and you find that the person has stopped breathing, you need to act. They have entered into cardiac arrest and you need to start cardiopulmonary resuscitation (CPR) immediately.

REMEMBER A – B – C

AIRWAYS BREATHING CIRCUALTION

CHECK AIRWAYS To open the airway, you may need to gently lay the person on their back. Place one hand on the forehead and gently tilt the head back, and lift the chin with the other hand using two or three fingers. This moves the tongue away from the back of the throat.

73 GIVE CPR TO OLDER KIDS & ADULTS

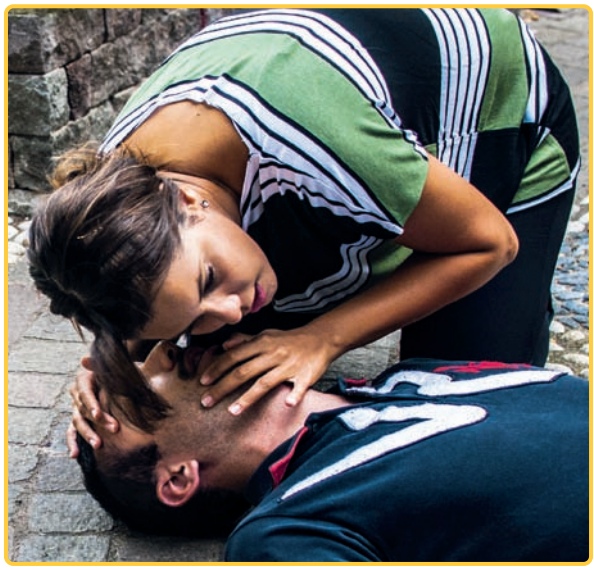
If you're getting ready for emergencies, you should get trained in CPR—but even without training, you can still help.

STEP 1 Call 911 or some other medical help ASAP.

STEP 2 Place the heel of your hand on the victim's sternum, in the center of his chest, with your other hand on top.

STEP 3 Lock your elbows and use your body weight to compress the chest, pushing down about 2 inches (5 cm)—lighter for children. Aim for 100 compressions a minute.

STEP 4 If you're trained in CPR: After 30 compressions, gently tip the victim's head back to open the airway, and pinch his nose shut before applying two deep breaths. Repeat steps 2–4 until help arrives or the victim recovers.



CHECK BREATHING To count someone's breaths, either watch for the rise and fall of his chest or listen to his breathing (with or without a stethoscope) for 15 seconds, then multiply by four (normal is 12–20 breaths per minute). If they are not breathing or if they are gasping or breathing irregularly, that is an indication that you need to start CPR.

CHECK CIRCULATION Check the pulse by placing your fingers on the neck or wrist. For the wrist, press two fingers against the inside of the forearm, on the thumb side. For the throat, find the Adam's apple, then move your fingers to the side just under the jaw. Count the number of beats in 15 seconds, and multiply that by four (60 to 100 is normal).

74 PERFORM CPR ON A BABY OR INFANT

Performing CPR on a baby needs to be done using care and much less force. Use just two fingers of one hand to compress the chest.

STEP 1 Call 911 or some other medical help ASAP.

STEP 2 Give five initial rescue breaths. This is essential as cardiac arrest in a baby is usually caused by a respiratory problem.

STEP 3 Use two fingers in the center of the chest to give 30 compressions. As with adults, aim for a rate of about 100 compressions per minute.

STEP 4 After 30 compressions, gently tip the victim's head back to open the airway, and pinch his nose shut before applying two deep breaths. Repeat steps 2–4 until help arrives or the victim recovers.

PART TWO

GETTING FED

PART TWO

GROW YOUR OWN

Food may be a very low survival priority in a short-term emergency, such as getting lost in the woods, but food procurement and processing become an all-consuming "day job" in a long-term setting or living a life of true self-sufficiency. In this section, we'll get you started in the age-old art of growing and producing your own food, using both plant and animal resources. These independent food production strategies are important facets of self-reliance. They can be achieved in many fulfilling ways, even if you don't become a rooftop gardener or off-grid goat farmer. Simple heritage skills like foraging can be used to supplement your food sources and diversify your diet, even in urban environments. For those with a little room in the backyard, we'll go further. You can try your hand at growing your own fresh vegetables. Small animals like chickens and rabbits can represent your first "toe in the water" with farming, providing you with fresh, delicious eggs and homegrown meat.

These plants and animals will need more care than you might be accustomed to giving, but they can also bring unexpected joys. With our fast-paced lifestyle, it can be therapeutic to slow down for a moment to watch your chickens scratch around in the dirt. It can be similarly rewarding to collect their eggs and use them in a meal for your loved ones. There will be plenty of work ahead of you, since there's more to food production than just flinging some seeds out your window or turning a flock of chickens loose in your yard. Knowledge, discipline, and tenacity are beneficial to all these endeavors. We're ready to partner up with you on this. We bring the know-how, you bring the hard work, and we'll grow something amazing together.

75 GET GARDENING

You can read all the gardening books and green-colored websites you like, but there's no substitute for real-life experience. After a catastrophic event, folks may be suspicious of strangers, or wary that you're out to steal their good stuff. So, start gardening now, and get all the local advice you can. What grows best in your local soil? What pests should you look out for? Local farmers and longtime gardeners will know, so seek them out and learn from their mistakes and successes.

76 PICK THE RIGHT SPOT

The site you pick for your garden is critical. It should take into account soil composition and light exposure. Visit your county's agricultural extension office—with a little help, you can learn which parts of your property are best suited for gardening and farming. Then pick a spot in the best soil area with at least 10 hours of direct sunlight each day.

Orient all rectangular beds or rows on a north–south axis for equal light exposure. Plant the tallest plants at the north end so they don't shade smaller plants. If you have containers, avoid placing them too close to metal siding or similar reflective surfaces during the hottest times of the year, as that will cause the plants to cook or dry out.

77 DIG THE DIRT

You can't just throw some seeds out on the lawn and expect anything productive to happen. Vegetables need to grow in loose, rich soil—without competition. Your garden should have the sod removed, and then be dug and chopped with a shovel, or tilled with a rototiller machine, at least 1 foot (30 cm) deep—but twice that is better. This is hard work, but the payoff is huge, as deep root growth pulls in more nutrients and provides a better water supply.

Before you pile on a bunch of fertilizer willy-nilly, purchase a soil test kit to get a rough idea of the nutrient levels. This testing can help determine the deficiencies of your garden soil and allow you to make the right amendments. No matter your test results, well-decomposed compost is always welcome. The good stuff will be aged, very dark in color, and will have gone through a high-heat stage of decomposition to kill diseases and weed seeds. Add as much as you can to your garden, blending it with the soil or just applying on the surface. For clay-filled soil, add sand; likewise, add clay to sandy soil, and you can add aged manure to any variety.

78 PLACE YOUR PLANTS

You can sow seeds directly into the dirt, or you can plant seedlings from their small containers. Either way, water liberally to settle the soil around them. Seedlings can suffer from transplant shock if planted in hot, dry soil—plant in the evening so they can adjust to their new home.

Certain plants grow better if planted as companions to one another. One of the best-known plant companion sets is corn, beans, and squash (the Native American "Three Sisters"), which provide each other with needed shade and structure. Onions, garlic, chives, marigolds, and nasturtiums all offer you some degree of pest repellent. And never plant anything near black walnut trees, as they release vegetable-killing chemicals into the soil.

Unless it rains all the time in your area, you'll need to water all those plants. Water deeply and thoroughly every other day. Water in the morning, if possible. Watering in the heat of a sunny afternoon will cause the droplets of water to burn the plant leaves like little magnifying lenses, and watering in the evening or at night can encourage fungal diseases.

- DIVIDE PLOT INTO 12-INCH- (30-CM-) SQUARE SECTIONS AND PLANT A DIFFERENT VEGETABLE IN EACH
- PUT SHALLOW-ROOTED PLANTS NEXT TO DEEP-ROOTED ONES SO THAT THEY DON'T COMPETE FOR RESOURCES
- CHOOSE VEGETABLE VARIETIES THAT GROW VERTICALLY TO INCREASE YIELD
- PLANT TALL PLANTS AT THE PLOT'S EDGE TO KEEP THEIR SHADOWS OFF ADJACENT PLANTS
- REPLANT AS SOON AS YOU HARVEST
- FERTILIZE SOIL YEAR-ROUND
- VARIETY IS THE SPICE OF LIFE! PLANT AND ENJOY A WIDE RANGE OF NUTRITIOUS CROPS YEAR-ROUND

79 GO URBAN

Living in the city doesn't mean you can't grow a garden. There's always a way to make the room that you need to develop a supplemental food supply. You may not get to produce the volume of food that your rural friends can grow in their wide-open spaces, but you can still grow a respectable amount of nutritious and tasty vegetables—and add to your growing sense of food security by becoming an urban gardener.

SEEK THE SUN Unless you live in a tiny basement apartment, chances are good that you have some direct natural sunlight coming through the windows of your home. A few lucky city dwellers may have a backyard or rooftop access, but for most folks, you only get what your windows and balconies provide. If you have a southern exposure to your dwelling, use these south-facing balconies and rooms for your urban garden. These get the most direct sunlight each day, regardless of season. North-facing areas will be the worst garden spot, as they remain fully shaded most of the day.

GROW UP Like cities themselves, if you cannot grow outward, then you must grow up. There are numerous styles of hanging containers, vegetable-growing towers, and even wall installations which allow you to grow food when floor space is at a premium. The inverted tomato-growing buckets do reasonably well, but using something with a larger volume of soil is much better for your plants. Vine vegetables like cucumber and pole beans can be trained to grow upward or laterally by gently tying them to string, rope, railings, or latticework.

LIGHT 'EM UP Grow lights are often employed by indoor gardeners to supplement or replace the rays of the sun. But these are not the only options for plant lighting. Mirrors can also be very helpful, by bouncing direct sunlight toward your plants. You'll see the plants respond to the mirror's extra light within days. The phenomenon known as phototropism can be seen as plants grow toward the light and the leaves orient themselves perpendicular to the light streaming in. Use any size mirrors to redirect the sun to your plants, but bigger is better. You can even do a downsized version of this mirror trick by placing aluminum foil under your plants to bounce light up under the leaves.

WATER WISELY City water is treated with chlorine and other chemicals to make it safe for people to drink, but it's not all that good for your plants. Although small amounts of these chemicals seem to be tolerated by most plants and vegetables, the best way to water is to collect as much rainwater as possible (if it's legal in your area) and use that to water your plants. If you must use chlorinated tap water for your vegetables, let the water sit out in an open container for a day or two, to let a significant part of the chlorine evaporate.

80 TAKE IT EASY

Since limiting factors like light and soil depth have such an important impact on urban gardening, you'll want to select the easiest plants to grow. In general, skip tall-growing vegetables, like corn, and ones with trailing vines, like pumpkin. Focus on herbs, tough perennials, root crops, and salad plants for the best results in your urban Eden. Here are a few ideas:

- Cilantro, chives, basil, and parsley (need to be replanted each year)
- Rosemary, mint, thyme, and sage (perennials that last years in the same pot)
- Potatoes, beets, and radishes (these do better in cool conditions)
- Sweet potatoes (these are ideal for very warm areas)
- Lettuce and spinach (can handle short day length or low light)
- Cucumbers and cherry tomatoes (do well if they have enough space and light)
- Green beans and peppers (can handle heat and dry conditions)
- Peas and kale (can handle very cold weather).

81 BUILD A FOOD WALL

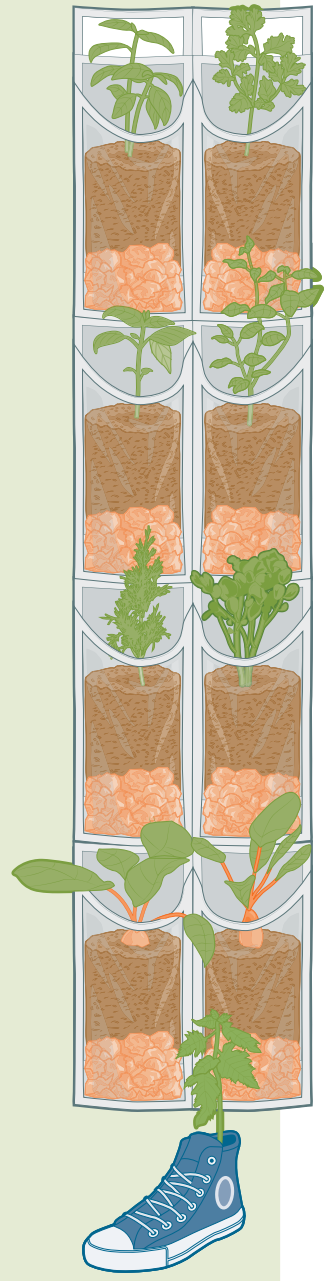
If your space to grow is limited, or you just want to maximize your production, a shoe organizer and some potting soil can be used as an improvised growing wall for crops like herbs, lettuce, spinach, and small root vegetables like radishes.

STEP 1 Securely attach a plastic or nylon shoe organizer to a strip of wood or wood frame, using screws or nails depending on the surface behind the growing wall. Mount this to the sunny wall of a patio or balcony. Other outdoor installation sites can include an exterior wall of your home or a fence. Indoor installations can work as well, but protect your floors—you'll need a container underneath the grow wall to catch any water that drips through.

STEP 2 Fill each pocket of the shoe organizer with potting soil. This can include time-release fertilizer or you can mix in your own blend. If you may not be able to water the growing wall daily, you can add water-absorbing crystals to the potting mix. These soak up water and then release it slowly, keeping the plants healthier if you miss a day of watering.

STEP 3 Plant your seeds or seedlings in each pocket and water thoroughly. If the pockets are clear plastic or vinyl, the dark soil may heat up too much in strong sunlight or hot summer months. Hang a bit of light-colored cloth on each row to prevent overheating. In cool weather, however, this solar heat gain will help your plants grow.

STEP 4 Fertilize, harvest, and replant as needed. The potting soil, if fertilized every other month, should last for several growing seasons. Loose leaf lettuce and spinach could be ready to harvest within 30 days of planting seedlings or 45 days from planting seeds. Cut the fully grown crops and replant the shoe pockets immediately for the fastest turnaround.



82 BUILD A RAISED BED GARDEN

A raised bed garden can provide you with a surprising amount of food from a very small space, and it works in a variety of climates. This type of versatile garden bed can tackle a number of common problems in gardening, as it can make for good drainage in rainy climates and warmer roots in cold climates. Here's how you can set up a 32-square-foot (10-square-m) raised bed garden.

GO SHOPPING Your local home-improvement store should have everything you need, but you may already have some of these things at home, too. Grab a deer fence and assemble the following supplies.

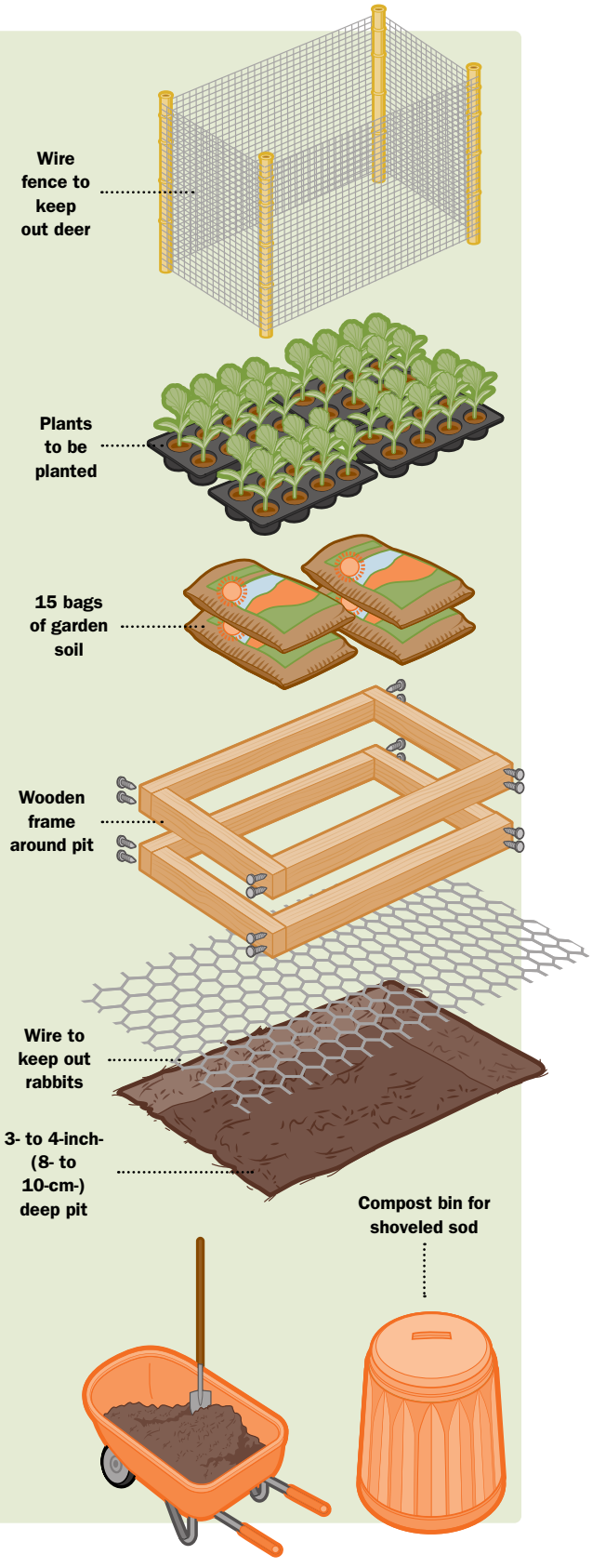
YOU'LL NEED

- SIX 2x8x8 BOARDS, 2x8 INCHES (5x20 CM) AND 8 FEET (2.5 M) LONG
- HANDSAW
- SMALL BOX OF 16 PENNY NAILS (LABELED 16D) OR 3-INCH (8-CM) DECK SCREWS
- SHOVEL
- CHICKEN WIRE
- 30 SQUARE FEET (9 SQ M) OF GARDEN SOIL (USUALLY 15 BAGS)
- SEEDS OR SEEDLINGS FOR HIGH-CALORIE CROPS

PICK A SPOT TO BUILD Pick a site with at least eight hours of uninterrupted direct sunlight per day. Less than that will greatly reduce your production. To build your frames, cut one of your boards in half lengthwise. Nail or screw the ends of your short pieces to two long boards to create a rectangle. Repeat with the second set of boards and stack them for height. Align the long axis on a north-south line so that sunlight hits both sides.

DIG THE SOD Make marks on the ground that match the dimensions of your frame, and remove any grass, weeds, and roots by digging. You'll need to dig 3–4 inches (8–10 cm) down to get most of the roots, and be diligent. Use the debris in your compost pile.

FILL IN YOUR GARDEN BED Place your wooden frame over some chicken wire (to keep pests from burrowing up) on the ground you have prepared. Fill the frame with your garden soil and plant your seedlings or seeds. Water the bed deeply every couple of days.

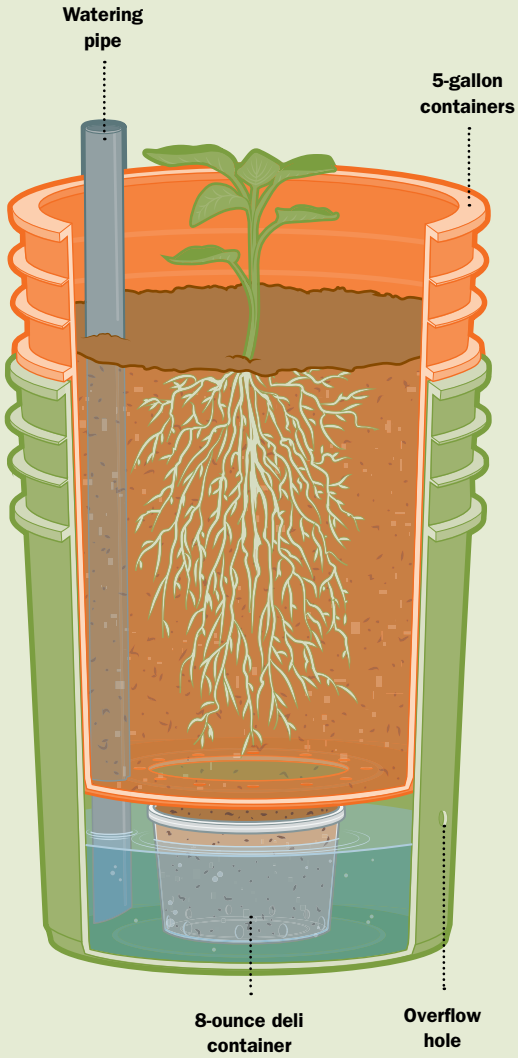

Wire fence to keep out deer
Plants to be planted
15 bags of garden soil
Wooden frame around pit
Wire to keep out rabbits
3- to 4-inch- (8- to 10-cm-) deep pit
Compost bin for shoveled sod

83 MAKE A SELF-WATERING CONTAINER GARDEN

Containers are a great way to grow food in small spaces or to add extra growing space in and around your home and property. Many vegetables grow well in containers. It's best to use a self-watering container—this reduces your labor and also allows plants to suck up the water they need through their roots, which can help to eliminate any over- or under-watering. Daily watering can be annoying, and commercial self-watering containers can be pricey. Here's how to make your own, with some simple-to-obtain supplies.

YOU'LL NEED

- TWO 5-GALLON (19-L) FOOD CONTAINERS
- 8-OUNCE (225-G) PLASTIC DELI CONTAINER OF THE SORT THAT YOU'D BUY POTATO SALAD IN
- LENGTH OF PLASTIC PIPE
- POWER DRILL



STEP 1 Drill some small holes all the way around the deli container, spaced about an inch (2.5 cm) apart.

STEP 2 Using a 3-inch (8-cm) hole saw, make a hole in the bottom of one of your large containers, and then follow up with smaller drainage holes all around the central hole. Then, using a 1¼-inch (3-cm) hole saw, drill a water hole for the pipe to run through.

STEP 3 Assemble the container, placing the plastic deli container in the bottom tub (the one without the holes) and the drilled-out tub on top of it.

STEP 4 Determine where the inner container's bottom is (holding the whole container up to a strong light should make this apparent). Drill a small overflow hole about ¼ inch (0.5 cm) below the inner tub's bottom.

STEP 5 Run the watering pipe down through the 1¼-inch (3-cm) hole.

STEP 6 Fill the container with potting soil (it will fill the deli container as well), and plant your produce.

STEP 7 Pour water down the pipe until it flows out the drainage hole. This will now water your plants through their roots. Every week or so, pour a little water down the pipe and see how your reservoir is doing.

84 BE ADAPTABLE

Adaptability is one of the crown jewels of the survival mindset. To be adaptable, you must be able to change along with changing events, situations, and environments. It's all about flexibility and trying new options. If you get lost in the woods one afternoon, you may not make it home to your own bed. An adaptable person will assess the situation and realize that their own bed isn't an option, so they'll have to adapt. They'll find a new place to sleep. Since there aren't any water faucets in the wild, they'll have to find a new source of water. There's no fridge either, so they'll find a new source of food. These "substitutions" may not be as comfortable as they would like, but they're good enough for now. An adaptable survivor can embrace change, while recognizing the things that are worth continuing and the things that need to be abandoned.

Tied closely to adaptability is another facet of the survival mentality: creativity. We are the most "creative" animal on the planet, making fire, metal, airplanes, iPhones—and sometimes, we even make our own problems. This innate creativity usually benefits us, enabling us to devise ingenious solutions (in daily life and in emergencies). When we can combine the traits of adaptability and creativity, there is very little we cannot accomplish (ready to try surviving on Mars, anyone?).

"I CAN'T CHANGE THE DIRECTION OF THE WIND, BUT I CAN ADJUST MY SAILS TO ALWAYS REACH MY DESTINATION."

Jimmy Dean

THE PROBLEM: A fear of failure can ruin someone's natural adaptability and creativity. This form of fear is different from normal fear (like being afraid of a dangerous thing). It may stem from childhood, when adults or hyper-critical peers damaged your confidence. It may also arise from a reluctance to disappoint others or to admit that there are limits to your abilities.

THE REMEDY: Forget about permission and reassurance. Don't beat yourself up if you fail sometimes—everyone does. When you see something that you can do, and you think it might work, be confident and give it a try. Confidence can unlock your creativity, and creativity can save the day.

85 SURVIVE LIKE THE FITTEST

Whether you believe in creation, evolution, genetic engineering by alien overlords, or something altogether different, you've probably heard the term "survival of the fittest." It's a term that's often used to explain natural selection in biology. It's also heavily used in literature and even found in diverse fields such as economics and sports.

Here's a little backstory. British biologist Herbert Spencer first coined the catchy phrase in 1863 in his book *Principles of Biology* after being inspired by Charles Darwin's *On the Origin of Species*. One of their contemporaries mentioned the concept in a letter to Darwin, who replied back "I fully agree with all that you say on the advantages of H. Spencer's excellent expression of 'the survival of the fittest'." With Darwin's stamp of approval, the phrase only grew in popularity throughout the scientific and literary worlds.

So what does the phrase really mean? If you're imagining that it means only the most muscle-bound animals and plants will make it, you're missing the mark. In Darwinian terms, the "fittest" life forms aren't necessarily the fastest or the most extreme. They're the ones that are best adapted for the local environment and the ones that leave the most copies of themselves in future generations. In short, they are both well adapted and prolific reproducers.

Now, as fully formed humans, you might be wondering what "survival of the fittest" can do to help you through tough times. We can't just breed our way out of an emergency, or command our bodies to sprout a fur coat when the weather turns chilly. We can, however, take the lesson of adaptability to heart and train ourselves to be better survivors. We can do this by learning new skills and maintaining some level of physical fitness. Yes, these things take some work, but they also yield unexpected benefits.

"NO [ONE] HAS THE RIGHT TO BE AN AMATEUR IN THE MATTER OF PHYSICAL TRAINING. IT IS A SHAME FOR A [PERSON] TO GROW OLD WITHOUT SEEING THE BEAUTY AND STRENGTH OF WHICH [THEIR] BODY IS CAPABLE."

Socrates

PUT IT TO WORK!

Darwin wasn't saying that we all need to be top athletes in order to survive, but you should still get up from the couch once in a while. If you want to take advantage of all the survival features on your body, you can't just lie around and do nothing. Go out for a walk instead of going for ice cream. Take up martial arts or sports. Find something that keeps you active, and you're more likely to stay active for a long time. When a bear is chasing your group through the wilderness, you don't have to be the fastest runner. You just need to not be the slowest.

86 PLAN YOUR PLANTS

This chart lists some common veggies for your own garden, and which make good neighbors (or not) depending on factors such as growing periods, or competition for resources, when planted next to each other.

PLANT	FRIEND	FOE
BEANS	CORN, CABBAGE, CUCUMBERS	GARLIC/ONIONS
CARROTS	LETTUCE, PEAS	STRAWBERRIES, CABBAGE
CELERY	BEANS, CABBAGE FAMILY, SPINACH, TOMATOES	POTATOES
CORN	BEANS, CUCUMBERS, MELONS, PEAS, PUMPKINS, SQUASH	CABBAGE, TOMATOES, CELERY
CABBAGE FAMILY	POTATOES, BEETS, CELERY, GARLIC/ONIONS	TOMATOES, BEANS, PEPPERS, STRAWBERRIES
GARLIC/ONIONS	CARROTS, BEETS, STRAWBERRIES, TOMATOES, LETTUCE, CABBAGE	PEAS, BEANS
POTATOES	BEANS, CORN, CABBAGE, EGGPLANT	PUMPKIN, CUCUMBER, SQUASH, MELONS, SUNFLOWER
SQUASH	CORN	POTATOES
TOMATOES	ONION, CARROTS, CELERY	CABBAGE FAMILY, POTATOES

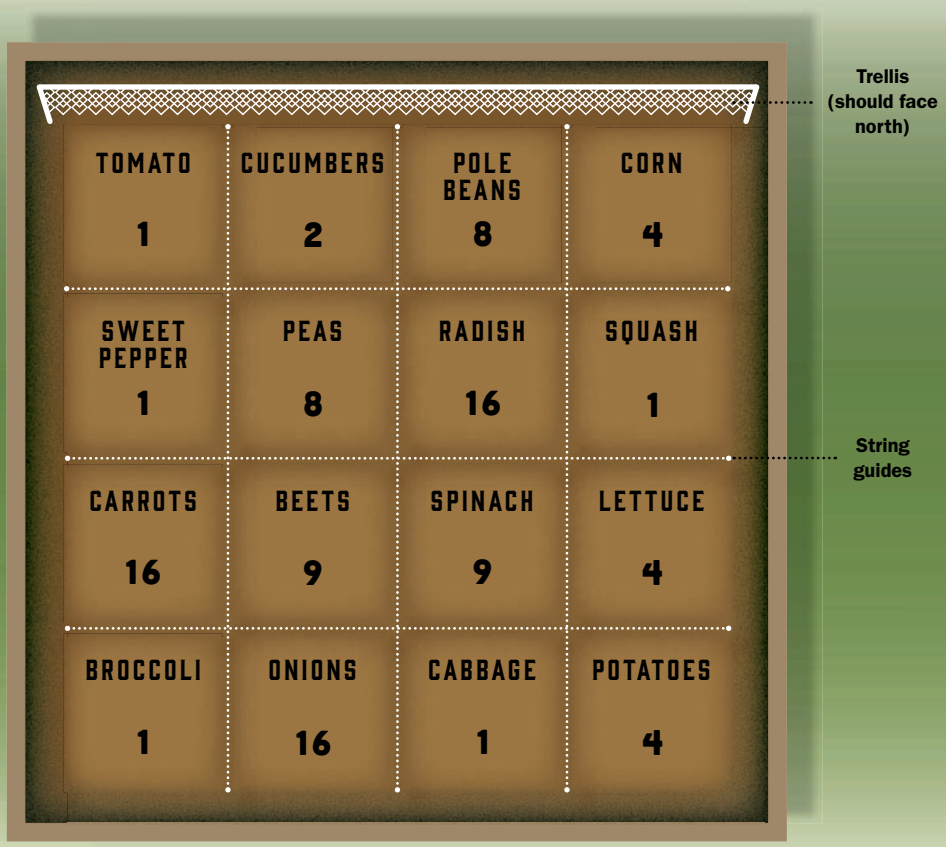
87 GROW A SQUARE MEAL

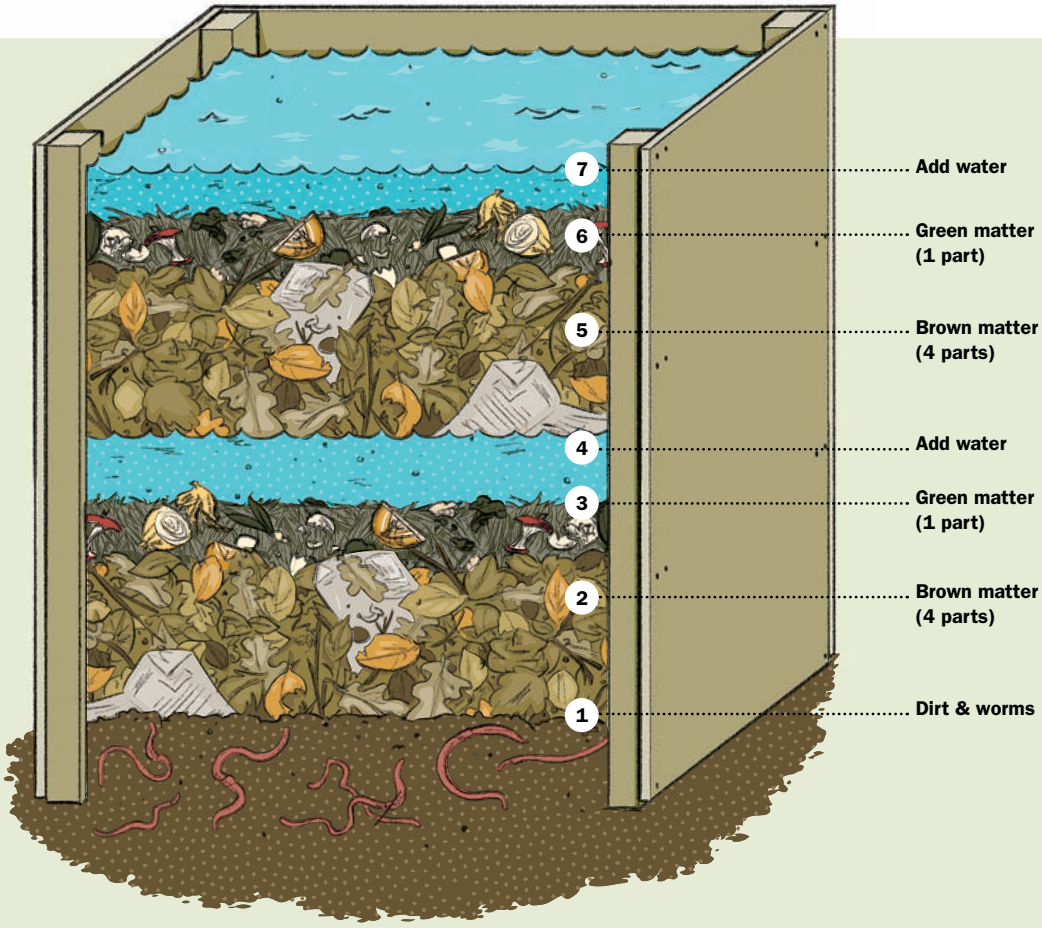
What's known as "square foot" gardening is really popular in small spaces such as suburban back yards, but can also make a great kitchen garden anywhere. Start by building a garden box to hold your soil. This plan is for a 4 foot by 4 foot (1.2 x 1.2 m) box. The walls should be at least 8 inches (20 cm) high, to hold your dirt in. Lay some string over it in squares to map out what to plant where, and then follow the handy guide below as to how many seeds to plant in each square of your grid.

Being able to raise your very own garden full of vegetables is a necessity of survival for some, and it's a fascinating skillset to learn regardless. But don't go wild, planting every single thing you can think of. Begin with a few crops that help each other to grow. If you have the opportunity, you could even start with one single variety of plant, and learn about how to properly take care of it. Once you've mastered one or a few vegetables, go from there.

TOP TIP

The cabbage family is made of cole crops, also called Brassicas, or cruciferous vegetables (after their four-petaled flowers). Broccoli, cabbage, Brussels sprouts, kale, bok choy, and cauliflower are just a few of the literal dozens of varieties—all of which are high in fiber, vitamin C, and plenty of other nutrients.





88 BUILD A COMPOST PILE

Keeping your soil healthy enough to sustain crops requires fertilization. For the self-reliant gardener, this means compost. Here's an easy way to maintain a compost system for a self-sufficient home.

Compost is partially decomposed organic matter, and it is your garden's best friend. Through the tireless labors of earthworms, insects, fungi, microorganisms, and enzymes, all sorts of organic matter can be converted into dark nutrient-rich compost in as little as two weeks, under ideal conditions. Compost can be beneficial to any patch of earth as it helps to improve the soil structure, provides more nutrients to living plants, moderates any pH and fertility problems, and stimulates beneficial organisms in the dirt. Since compost almost literally makes itself, all you have to do is pile up the right materials in a heap. For the best possible results, you will need carbon-rich and nitrogen-rich organic materials in about a 4:1 ratio. The larger amount of the high-carbon "brown" organic materials (such as straw, wood chips, and dead leaves) along with a lesser amount of "green" materials with a high nitrogen content (including grass clippings and kitchen scraps) can be blended and watered until they have the moisture content of a wrung-out sponge. It's important to keep in mind that compost-producing organisms will need a lot of oxygen to do their work. There will be plenty of it available when the compost pile is first built, but you should take time to stir the pile thoroughly once a week to help keep it all properly oxygenated. You'll know that your pile is working efficiently if the compost starts getting hot. Heat is a byproduct of high levels of microbe activity, but even a cool pile of compost is still decomposing. It just takes a lot longer—up to a year or more.

89 CREATE COMPOST FROM NIGHTSOIL

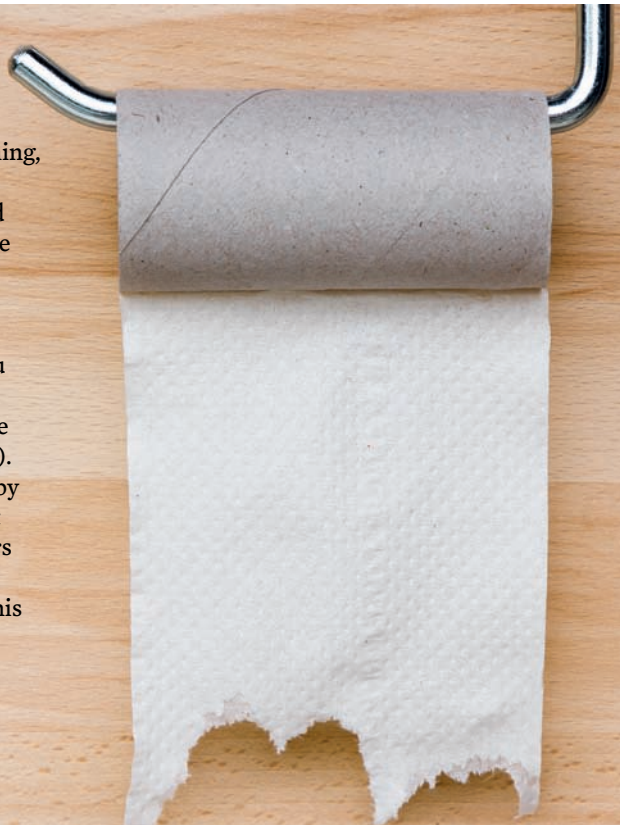
Nightsoil (aka human feces) has been an indispensable resource in global agriculture for millennia. Over the past 4,000 years, farmers in Asia have produced up to four crops each year in the same dirt farmed by their great-grandfathers. So why isn't everyone putting "people poop" in their gardens? There's just one tiny problem—disease-causing microorganisms. The hazard can be greatly reduced by helping things to decompose a little faster than they would in nature. The two biggest factors for composting are time and temperature. Canine, feline, and human "leavings" should only be composted in the hottest piles to avoid spreading disease-causing pathogens in your garden. Build hot piles by using mostly "brown" materials (like straw, wood shavings, and dead dry leaves) and blending in just a little "green" material (like grass clippings, green leaves, vegetable scraps, and feces). Build these in an out-of-the way area that is downhill from any foot traffic areas and away from waterways. Keep the pile as wet as a wrung-out sponge—spray it with a garden hose if it starts to dry out. Stir it with a pitchfork every few days for the first few weeks to introduce oxygen. Once the compost looks like dirt, it should be aged for one full year before application.

90 INVITE YOUR PLANTS TO TEA

Are your precious veggies looking a little bit sad? Maybe they could use a good drink. Compost tea isn't really tea or compost, but it makes for an invigorating beverage for your plants. To make it, you need a helping of some quality compost, an aquarium air pump with a set of tubing and a few air stones, an ounce (30 ml) of organic unsulfured molasses, a 5-gallon (18.9-l) bucket, and 3 gallons (11 l) of rainwater. Combine the water and molasses in the bucket, then stir in several shovels of compost, being sure to leave some room at the top of the bucket to prevent it from bubbling over. Connect the air stones and tubing to the aquarium pump and let it run for three days, then turn off the pump and let the bucket settle. Strain off the water and use immediately as a soil drench, or spray it on your plants within one hour of stopping the aeration. Compost tea provides nutrients, helps suppress disease, and may enhance the nutrients and taste of your home-grown vegetables.

91 MAKE YOUR OWN T.P.

If the great toilet paper shortage of 2020 has taught us anything, it has taught us to be prepared to run out of toilet paper. You should always stock T.P. when building your emergency food storage (one roll per person per week), but you can also make your own toilet paper alternatives from common materials. Few of these would be "plumbing safe" (capable of flushing down a toilet without clogging the lines), but there are some options. If you've ever come home missing a sock or two, you know that cloth, clothing, and rags can be a T.P. alternative. The problem arises when you're done and you have to decide whether you'll throw the cloth away or try to wash it (gross!). A disposable option is a better choice, and this can be made by processing low-quality paper items into soft sheets. Tear out sheets from old pulp paperback books and catalogs (the Sears catalog was an outhouse staple of yesteryear). Crumple each page into a tight ball, then flatten it back out again. Repeat this crumpling and flattening procedure until the desired soft texture is achieved. Enjoy the soft paper and compost it for disposal rather than flushing it.



92 KEEP IT DRY

Dry goods and some other foodstuffs can be safely stored for a long time in a variety of containers, when packaged with the appropriate desiccant or oxygen absorbers. My favorite containers are 5-gallon (18.9-l) food-grade storage buckets. If possible, buy new buckets with lids, although recycled ones will still work. Next up, order enough Mylar storage bags and oxygen absorbers to go with the buckets that you have. You can do small bags for rationing purposes and modular storage, or you can use large bags that line each container. You don't need the O2 absorbers in everything. Sugar, honey, and salt will never need them, but grain, powdered milk, and other foods will. 100cc oxygen absorbers are a great choice, as you can parcel out the right amount of the product for different jar sizes. You will need one 100cc packet for a 1-quart (0.95-l) jar, and 4 packets each for 1-gallon (3.79-l) jars and containers. 5-gallon (18.9-l) buckets will usually take the equivalent of 1,500cc to 2,000cc of oxygen absorbing product. Desiccant packs may also be placed in foods that have some residual moisture, such as dried fruit and jerky, to help avoid any spoilage or mold.

93 CHECK SHELF LIVES

If you store food in a cool, dry, dark place, it should last its full shelf life in ideal conditions. Here are the shelf lives of some common foodstuffs.

94 PACK IT IN PETE

For long-term storage of dry goods, consider using bottles made of PETE (polyethylene terephthalate) plastic. Many standard bottles out there are made of PETE (check for these letters under the recycling symbol), but you want to buy fresh ones. A lot of plastic is too flimsy or porous to moisture, oxygen, and pests, but PETE, used in combination with oxygen-absorbing packets, does the job. Only use this kind of packaging for dry foods—moist foods must be handled much more carefully to avoid the danger of botulism. Bottles should be no bigger than 1 gallon (4 l).

STEP 1 Test your bottle's seal by closing it tightly, placing it under water, and pressing on the lid or cap. If any bubbles escape, that means the seal is faulty; don't use it for long-term storage.

STEP 2 Place an oxygen absorber (a packet of iron powder that helps keep food fresh, available at home storage stores or online) in the bottle.

STEP 3 Fill your bottle with dry goods (wheat, corn, dry beans, etc.).

STEP 4 Wipe the bottle's top sealing edge clean with a dry cloth, and screw on the lid tightly.

STEP 5 Store the sealed bottle in a cool, dry location away from direct light. If you use a bottle's contents, add a new oxygen absorber when you refill it.

JERKY, COMMERCIAL PACKAGED
12 MONTHS

COCOA
12 MONTHS

CHOCOLATE CHIPS, SEMI-SWEET
2 YEARS

DRIED SPICES
2–3 YEARS

HOT SAUCE
5 YEARS UNOPENED

HONEY
INDEFINITELY

TOP TIP

Even if you're not going off the grid, sensible planning means having at least a few days' worth of food stored in case of an emergency.

95 STOCK UP ON STAPLES

Dry goods are the cheapest way to go if you want to build your own emergency food supply on a limited budget. Dry pasta, rice, flour, dried beans, sugar, and plenty of other staple foods can be stored for up to 30 years with negligible nutrient loss when properly packaged and stored safely.

OATS

Most oats are rolled or milled to facilitate their transformation into oatmeal. This is a fine staple as it is, but you can also use rolled oats for bread, cookies, or granola.

SUGAR

It may not be particularly nutritious, but sugar makes a great staple due to its calories and indefinite shelf life. You can add sugar to virtually anything.

FLOUR

This ingredient can be put to a variety of uses, such as fresh bread. It can also be used to make gravy, cookies, dumplings, and plenty of other tasty items.

RICE

A global staple, rice can be boiled in water using 2 cups (473 ml) of water for each cup (200 g) of dry rice. You could also break out your flour mill to grind up rice flour.

BEANS

Protein-packed and long-lasting, beans and other legumes can give us plenty of energy and fill up our bellies. (Just be sure to soak and cook your beans thoroughly.)

CORN

Dried corn can be ground into cornmeal, or boiled to rehydrate it. Some varieties can be fried until they pop or ground into a porridge similar to grits.

96 KNOW YOUR FOREVER FOODS

When you think about long term food supplies, it's easy to think of a pallet of MREs, or cases of canned food. But these items will only last so long. What if you wanted to put together food supplies that will last a very long time and do it cheap? Whether you're anticipating a pandemic or economic trouble, or just making practical preparations for your remote home site, these basic food supplies have a lot in common with our ancestors' annual stockpiles. Sugar, salt, and a few other key ingredients can provide nutrition, just as they did for our ancestors, without breaking the bank today. You can add these staples to your emergency food supply, all of which have a 20-plus year shelf life.

HONEY · WHITE SUGAR · BROWN SUGAR · SALT · SOY SAUCE · VINEGAR · FLAVORING EXTRACTS · BAKING SODA

SALT

You don't need too much salt in your diet, but you do need a little. Add salt to savory and sweet dishes to enhance their taste. It's also handy for food preservation.

PASTA

At roughly 1,600 calories per pound (450 g), it makes sense to stock up on this easy-to-cook staple. Just boil some in water and improvise a sauce to go with it.

POWDERED MILK

This chalky beverage choice doesn't have to be used as a beverage. You can add the dry mix to virtually any food to increase the protein and calories.

POTATO FLAKES

This versatile product can be made into mashed potatoes, potato soup, potato bread, or little fried potato cakes. Although they can be a bit bulky, they're very nutritious.

TOP TIP

Manage your pantry like a grocery store. Put new items in the back and pull older ones forward. This keeps your foodstuffs in rotation and cycles out older supplies before they spoil.

97 BUILD A BACKYARD CHICKEN FARM

Raising chickens in your backyard is turning into an increasingly popular option these days for a whole range of reasons. Suburban dwellers (and even lucky urbanites with some serious backyard space) are being turned on to the benefits of fresh eggs. Chickens also provide great fertilizer in the form of their manure, insect control for the garden, and a tasty chicken dinner every once in a while (though many chicken-keepers rely only on eggs and don't use their chickens for meat). In a post-disaster world where you can't run down to the supermarket, a backyard chicken coop would be invaluable. Here are the basics you'll need to consider.

YOUR FLOCK You can buy chicks from farm-supply stores. They will start laying in six months, but you won't know if they're all girls. Easiest is to buy "ready to lay pullets," which are older and guaranteed to be female.

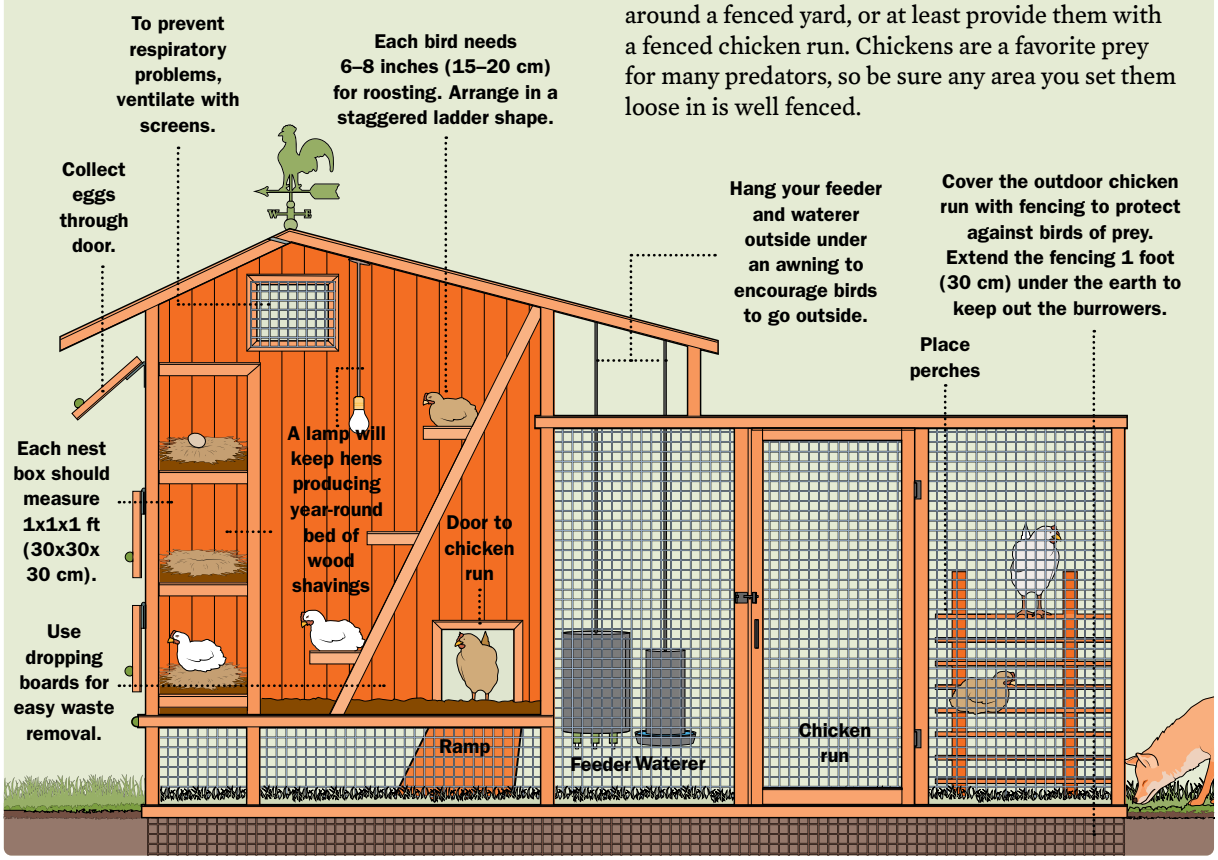
THE COOP There are many possible ways to set up your chickens' home; the drawing below gives the basics.

CHICKEN FEED Commercial chicken feed can be purchased in bulk; you can also grow your own.

EGG COLLECTING You'll want to collect eggs on a daily basis, unless you're intentionally planning to hatch some young'uns. Hens will lay much of the year—anytime there's 12 to 14 hours of daylight.

GIRL TIME Chickens are sociable creatures; they'll be happiest and healthiest if you keep at least four to six together. If you want to breed them, you need no more than one rooster per 10 to 12 hens. Any more, and things are likely to get hectic—as in unintentional cockfights.

THE RANGE You'll want to let your chickens roam around a fenced yard, or at least provide them with a fenced chicken run. Chickens are a favorite prey for many predators, so be sure any area you set them loose in is well fenced.


To prevent respiratory problems, ventilate with screens.
Each bird needs 6–8 inches (15–20 cm) for roosting. Arrange in a staggered ladder shape.
Collect eggs through door.
Hang your feeder and waterer outside under an awning to encourage birds to go outside.
Cover the outdoor chicken run with fencing to protect against birds of prey. Extend the fencing 1 foot (30 cm) under the earth to keep out the burrowers.
Place perches
Each nest box should measure 1x1x1 ft (30x30x 30 cm).
A lamp will keep hens producing year-round bed of wood shavings
Door to chicken run
Use dropping boards for easy waste removal.
Ramp
Feeder
Waterer
Chicken run

98 RAISE CHICKS

You can buy baby chicks newly hatched or "grow your own." To breed your own chicks, of course, you'll need a rooster, but you'll also want to be sure that you have a broody hen. That is, one that will actually tend to the eggs (not many modern chickens possess that maternal instinct). If one of your chickens pecks at you when you come to collect the eggs, or otherwise protects her nest, she's your girl. Bantams are known to be broody.

To raise your chicks in the absence of a mother, you'll want to keep them in a safe, warm "brooder pen." This doesn't have to be anything fancy. Here are some basic guidelines.

STEP 1 You'll need to keep your chicks safely contained, and you'll want about 2 square feet (0.6 sq m) per baby. If the pen is more than 12 inches (30 cm) deep, you don't need to worry about a cover, as they won't be able to escape. You can use a kiddie pool, fish tank, storage tub, or even a big cardboard box.

STEP 2 Set up your heat lamp. This will take a little bit of experimentation. Start with a 250-watt heat lamp with a good clamp and reflector. Don't get excessively MacGuyver-y here, as this can be a fire hazard. Use a red bulb with a screen over it (the screen helps prevent fires if the lamp falls into your shavings). You'll need to move the lamp up and down and check the temperature before committing your delicate little chicks to this environment. The temperature should measure at 92°F (33°C) about 2 inches (5 cm) above the pen's floor.

STEP 3 Add bedding. This can be paper towels or pine shavings. Don't use cedar shavings or newspaper, as they can be toxic to chicks.

STEP 4 Be sure they have food (use commercial chick-starter feed for greatest ease) and clean water.

STEP 5 After a couple of weeks, they'll start developing feathers. At that point, they don't need so much heat. Reduce the temperature in the brooder by 5°F (3°C) per week for six weeks.

STEP 6 Move the new kids to the coop. They're all grown up!

99 GET A GOOD EGG

A washed or rinsed egg will keep for about a month in the fridge (or other cool place if you're off the grid). But freshly laid eggs have a natural coating that keeps them fresh for significantly longer—up to four months. Some eggs may have droppings on them and need to be washed, but many won't, so don't just do it by rote.

Also, natural eggshells are much thicker than storebought ones. Commercial eggs are actually buffed to make them prettier, which also ends up weakening the shell. Your home-grown eggs will be much sturdier and healthier.

100 FEED FREE-RANGE CHICKENS

It's easy enough to buy giant bags of chicken feed from the store, but if you want to save money, or if you find yourself in circumstances in which commercial feed isn't readily available, remember that chickens were able to feed themselves for millennia before humans stepped in and opened the chow line. Here's how you can keep your chickens well fed *au naturel*.

DRIED CORN If you grow a large-ear feed corn, you can let it dry on the stalks, then store the ears in bins and distribute the corn to the chickens all winter. Chickens with access to grit (sand and pebbles they need to grind food in their gizzards) will have no trouble with whole, dried corn kernels (they're too much for baby chicks to handle, however).

SEEDS Millet, sorghum, and sunflowers are easy to grow and provide seeds that are nutritious for chickens. Just toss them the whole seeds—they'll know what to do. In addition, there are grains that you don't need to harvest or process in order for your chickens to benefit from them. You can plant alfalfa, clover, annual rye, cowpeas, and/or buckwheat, let them mature, and then allow your chickens to wander the garden, eating the seeds straight from the source. Sprouting any seeds boosts their nutritional value, which is particularly useful in winter when fresh foods are scarce.

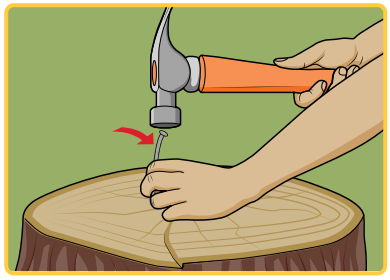
GREENS Kale, turnips, and mustard greens are all great for chickens. Cut the greens and feed them to penned chickens, or let them graze at will. As they do, they'll also eat bugs and larvae that can devastate your garden (and, as ever, drop little fertilizer nuggets as they go).

FRUIT & VEGETABLES Most discarded fruits and vegetables (anything that's just a little too icky for your table, or that you grew too much of) can probably be safely added to a chicken's diet. In the winter, if you have stored up potatoes, beets, and winter squash, these are all great for your birds.

EGGS This sounds kind of gross, but it doesn't bother the chickens, and it shouldn't bother you. Never feed chickens raw eggs, as this may encourage them to cannibalize their own nests. However, if you have cracked, dirty, or excess eggs, just hard-boil them and then crumble them (shells and all) into the birds' feed to amp up their protein.

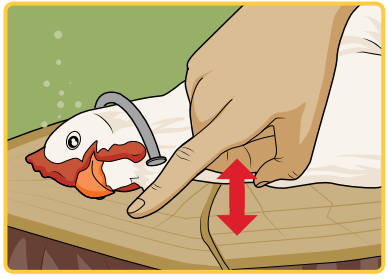
101 KILL A FOWL HUMANELY

You may have heard, if only from Iggy Pop, that it's relatively simple to hypnotize a chicken. This is, in fact, true and makes the job of dispatching one much simpler. Here's how to do the job as painlessly as possible for everyone.



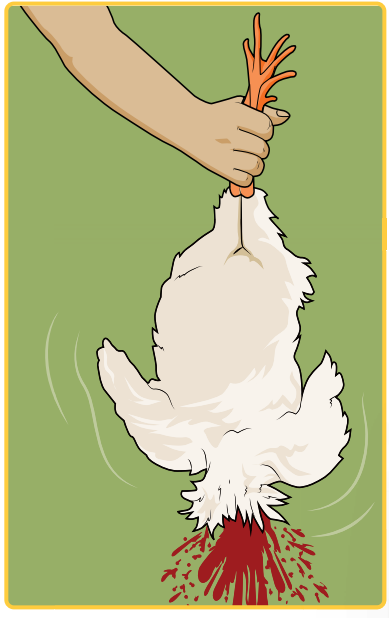
STEP 1 Pound a long nail into a stump. Bend the nail over to make a hook, sized just right for the chicken's neck to slide under.

STEP 2 Lay the chicken on the block with one wing under it, neck under the nail. Apply just enough tension to the legs to stretch the neck.



STEP 3 Tap your finger just in front of the bird's beak, then 4 inches (10 cm) away from it. Keep alternating taps like this until the hypnotized bird relaxes.

STEP 4 Using a hatchet, chop the chicken's head off.

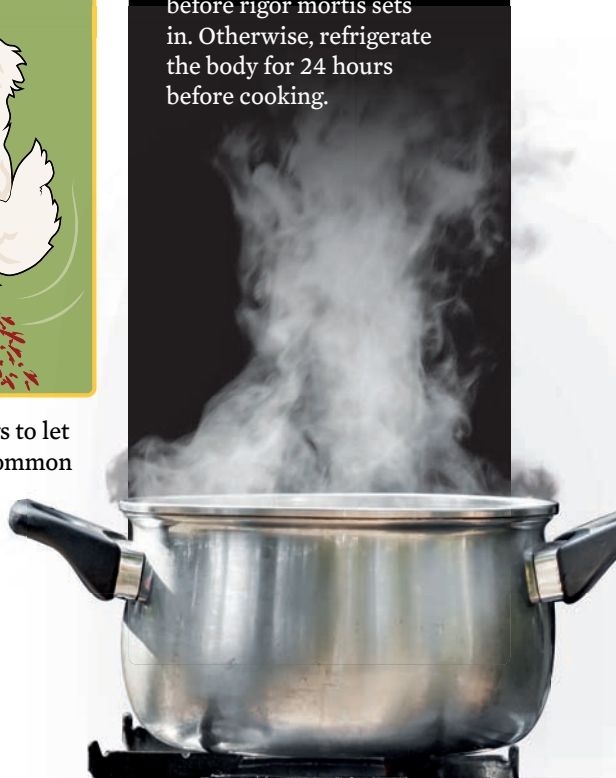


STEP 5 Hold it up by its legs to let the blood drain. Another common cliché, "running around just like a chicken with its head cut off," will come to mind, as the bird will likely flap its wings and seem to struggle.

102

PREPARE YOUR CHICKEN

When you go to behead your chicken, be sure you've got a pot of scalding water ready—it should be 140°–160°F (60°–70°C). Dip the decapitated bird into the hot water for 20–30 seconds. This should loosen the feathers to the point that you can easily remove them by hand with a firm wiping motion, rather than having to painstakingly pluck them. Chop off the chicken's feet, then cut around the cloaca (the bird's orifice), being careful not to cut into the intestines. Scoop the innards out with your hands and rinse the entire bird in cold water. If you can get all of this done in 20 minutes, you can then cook your bird before rigor mortis sets in. Otherwise, refrigerate the body for 24 hours before cooking.



103 LOOP THE LOOP

"Closed-loop farming" is a technical term for an old idea. Put simply, it is a return to the farming methods of our grandparents and great grandparents. They lived frugally and nothing went to waste, which is the definition of a closed-loop agricultural system. You can build your own system by producing as much as you can from start-to-finish. This ecologically sound practice puts you in control.

THINK SMALL How does one go about this process with small livestock? Let a field of grass get tall, then cut it into hay for your rabbits. Use the rabbit droppings for worm beds. Use the worms to feed your fish or chickens, and the dirt they produce (castings) in your garden. It's the kind of frugal living that people have done for ages, but with a scientific understanding of the relationships between the land, the plants, the animals, and people.

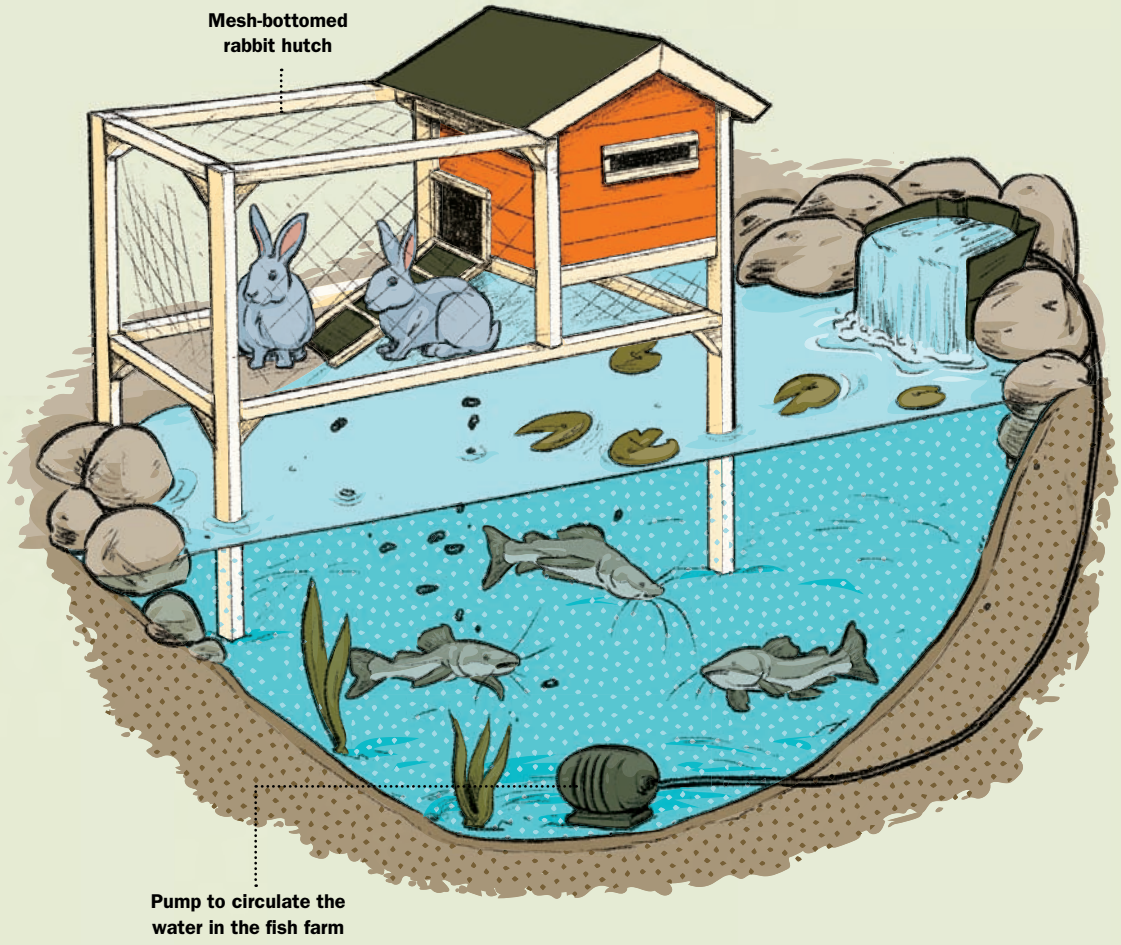
BRING IN THE BIRDS Fowl such as geese and ducks are voracious bug eaters, but very gentle on garden vegetables. You can turn them loose in your garden beds to eat cabbage worms, cucumber beetles, and many other crop-ruining pests, with little fear of them pecking holes in your perfect produce.

For a more intensive ground force, use chickens to clean up spoiled fruit lying around in an orchard. Chickens absolutely love juicy fruits, and will virtually purr with contentment as they make a feast of fallen fruit. To control insect pests and get some free protein for your chickens, lay out a bunch of old boards and lumber on the ground within the chicken pen. After just a few weeks, the boards' undersides will likely be crawling with a variety of insects—all of which the chickens will happily wolf down when you flip those boards over for them.

TOP TIP

Not a dog person, but still seeking an animal to guard your homestead? Consider the sharp-eyed goose. These insanely territorial animals have outstanding vision, great hearing, and are unimpressed by food bribes. The first recorded instance of geese saving the day comes from ancient Rome. In 390 BCE, geese were kept in the temple of Juno as sacred animals. One night, the geese heard or saw an enemy force approaching. The honking birds alerted city guards and saved the city from a Gaul attack. In recent times, geese have been adopted as guard animals outside police stations in Xinjiang, China.

104 FEED FISH WITH RABBIT POOP



I'd wager that most folks don't know that you can feed rabbit poop to many fish, with no harm to the fish or to you when you chow down on them. While the finicky cold-water trout may turn its scaly nose up at rabbit manure, plenty of warm-water and bottom-feeding fish, such as catfish, tilapia, and carp, will gladly feast upon your rabbit's leavings. Some savvy homesteaders have actually built their mesh-bottomed rabbit hutches over their fish farms, so that the "bunny berries" drop right in automatically! But if all this has you a little squeamish, you can always employ a middleman: the humble worm. Some rabbit farmers keep worm farms under their rabbit hutches for the same automatic recycling system that fish farmers are using. The rabbit droppings fall into the worm beds and get eaten by the worms. The worm population grows, giving you plenty of worms to treat your fish or chickens, and worm castings to help grow veggies (or maybe even some hay for your rabbits).

Breeding your own rabbit population is easy since rabbits breed like, well, rabbits. One healthy doe from a large-litter breed could produce as many as 100 kits per year for several years!

105 KILL SMALL ANIMALS HUMANELY

The hardest part of raising livestock for food is the humane slaughter and processing of the animal. Even the most hardened homesteader will develop some sort of bond with his hand-raised animals. A faster process means more humane results for the critter, and it's less unpleasant for you. Decide ahead of time which method works for you, and perfect it.

The captive-bolt gun is an excellent, if pricey, tool for killing animals such as cavy or rabbits. It is a miniature version of what slaughterhouses use for large animals like cattle or pigs. The bolt is placed on the middle of the head, just in front of the ears. A triggering mechanism releases a bolt, which impacts with enough force to kill the animal instantly.

Cervical dislocation is a preferred technique for most breeders. The old-school method involves using a broomstick to pin the head of the rabbit against the ground while pulling the hind legs upward until the skull is dislocated. Today, you can buy various types of wringers, or you can make your own from welded metal or cut from wood. All you need is a deep-cut "V." Slide the head into the groove until it is immobilized, then pull the hind legs to dislocate the skull. The animal dies instantly. The drawback here is potential bruising of the meat around the neck and shoulders.

One other option is to use a gun. You might hear people extol the virtues of a .22, but the cost of ammunition and the noise from the report make this method less than desirable. For killing small livestock, a break-action air rifle is sufficient. You'll want one that shoots above 900 fps for a killing shot. Use hunting pellets for your ammunition.

106 BUILD A BARREL ABATTOIR

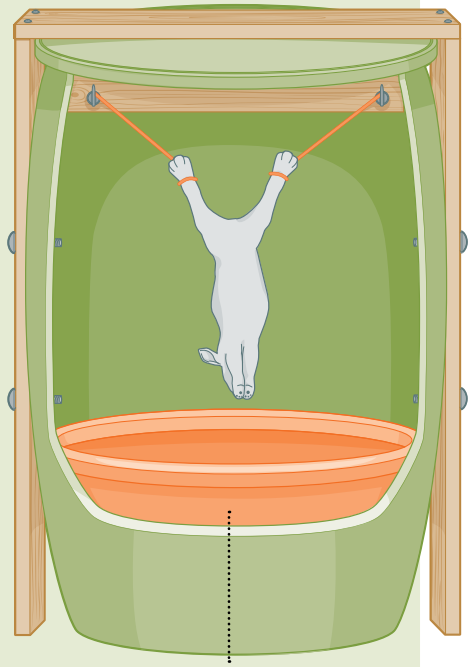
For most homesteaders, space is at a premium. Instead of devoting a whole structure or outbuilding to processing livestock, consider just constructing a small, portable station for your work. A 55-gallon (210-l) barrel can easily be repurposed for this design.

STEP 1 Use a jigsaw or handsaw to cut the barrel in half from the top down. Leave the bottom 12 inches (30 cm) of the barrel intact. You can either place a tub in the bottom to catch blood and entrails, or else you can simply line the bottom with a plastic garbage bag.

STEP 2 Build a simple 2x4 frame on the outside of the altered barrel. Place the flat side of the vertical 2x4s against the vertical sides of the barrel, and attach them with bolts and wing nuts.

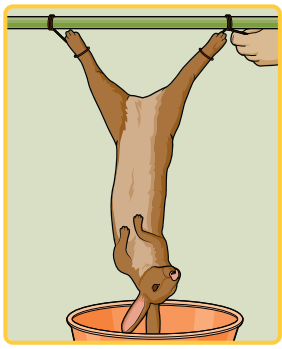
STEP 3 Attach a 2x4 crossbeam to the 2x4 legs and the barrel top. Another 2x4 length is fastened as a face plate at the top of the frame.

STEP 4 Affix the wringer and hangers to the crossbeam. Your barrel is now ready for processing.

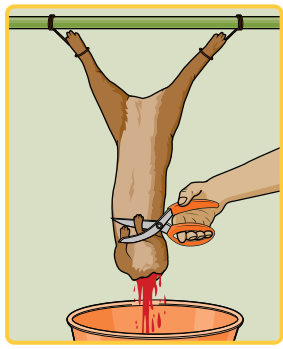


107 DRESS A RABBIT

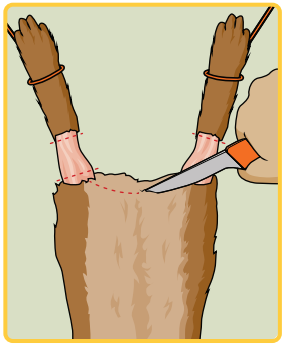
You can dress out a rabbit in under 10 minutes. With a typical litter of eight, a little more than an hour's worth of work will put protein on your table for a week or more.



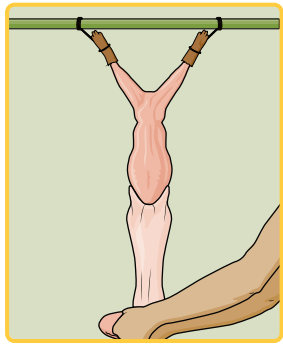
STEP 1 Hang the carcass by its hind legs. You can use either pegs, sticks, or strings inserted between the rear leg bone and the Achilles tendon.



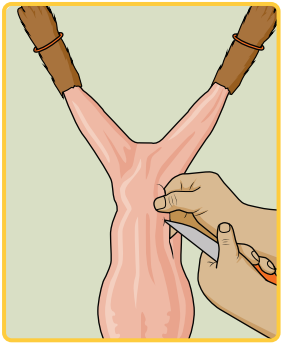
STEP 2 Cut off the head and allow the carcass to bleed out (about 5 minutes). Use high-quality, very sharp garden shears to sever the front legs at the joint.



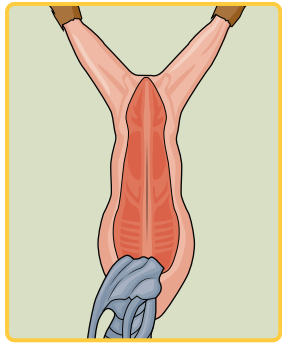
STEP 3 Cut the fur around the joint of each rear leg, and pull the skin as far down the leg as possible. Then, make a connecting cut from leg to leg, being careful not to nick the anus.



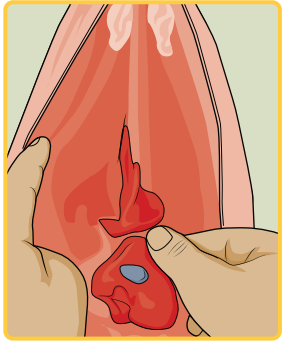
STEP 4 Make an incision around the anus and tail, then pull the skin completely down and off the carcass. If you're tanning the pelt, slit the skin lengthwise along the belly. You can tan immediately, or roll it, fur side out, and freeze for handling later.



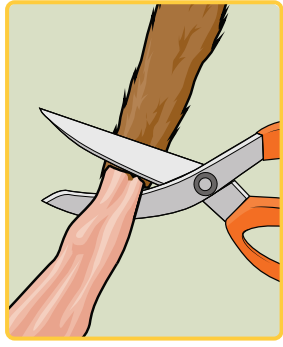
STEP 5 Make an incision in the muscle wall of the groin to begin gutting the carcass, being careful to keep all innards intact. This should be done with a careful slice.



STEP 6 Insert two fingers into the incision in a V to help pull the meat away from the guts. Cut the muscle wall carefully—don't damage the bladder or intestines, as that will taint the meat. Once your cut reaches the ribs, stick the blade in deeper and shear down through the ribs. All of the innards should be easy to pull free.



STEP 7 Pull the gallbladder off the liver (it looks like a pea), and set the giblets aside to add to the processed meat. Don't allow the liver, kidneys, or heart to fall into the waste bucket, as these giblets are edible.



STEP 8 Cut off the rear legs at the joint. Rinse off the carcass, then chill it in clean salted water or cook it immediately. You can keep the meat refrigerated up to 48 hours, or bag it for freezing. A vacuum sealer will also help keep the meat fresher longer.

108 STOCK YOUR TOOLSHED

We covered home tools in Part One, but what would you need to perform the "farm chores" necessary for self-sufficiency? Every farm once boasted a toolshed filled with all the necessary tools and supplies that were needed for common tasks. We can take a page from our collective family history and set up our own toolshed to be ready for service.

SAWS
A chainsaw can cut wood very quickly. Hand saws are slower but make finer cuts.

WRENCHES
End wrenches, pipe wrenches, and crescent wrenches are critical for mechanical work and repairs, as well as plumbing.

HAMMERS
A variety of hammers and mallets are needed for carpentry, mechanical work, and blacksmithing.

SHOVELS
Round shovels are for digging, while square shovels are for shoveling sand or grain, or for shoveling up material on hard surfaces.

SCREWDRIVERS
Vital for repairs and carpentry.

RAKES
Metal rakes and fan rakes are very handy around the farm.

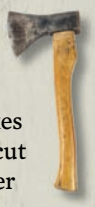
PITCHFORKS
These move hay, straw, debris, and animal bedding around.

SPLITTING MAULS

To split firewood.

MACHETES AND BRUSH AXES

These clear brush and heavy vegetation.



AXES

Large, sharp felling axes bring down trees and cut off their limbs. Smaller axes and hatchets can process kindling and do other small jobs.

POWER TOOLS

If your self-sufficient home has a place to plug them in, power tools will save you a tremendous amount of work. Drills and saws are particularly useful around the homestead.

FILES

Some files can sharpen your edged tools and help to repair metal items, while others are strictly for carpentry.

VICE

This holds items so they can be repaired or modified.

LOGGING TOOLS

Log tongs and cant hooks will help you roll and pull logs to wherever you need them to be.

109 SPROUT SEEDS

Seeds are absolutely amazing when you consider what they really are. They aren't just blobs that somehow become a plant. They are actually tiny living plants in a dormant state. Many seeds (especially the larger ones) are hardy enough to be sown directly into your garden soil, even when the ground isn't the ideal temperature or moisture level. Other seeds, however, will require more gentle care. We may decide to try indoor sprouting for several reasons. The most common sprouting activity is for edible sprouts. In just a few days and in very little space, you can grow sprouts for salads, sandwiches, stir-fries, and snacks. This can be done year-round and no sun or dirt is required. Place a few tablespoons of alfalfa seeds in a jar and soak them in water for a few hours. Cover the jar with a mesh lid or cloth covering. Rinse them with fresh water twice a day, and enjoy your fresh sprouts in a few days. You can also check germination rates and start delicate seeds indoors by keeping them in layers of wet paper towels in a waterproof container and in potting-mix-filled seedling trays with a plastic cover (to keep in moisture). Keeping them in a warm place can help many stubborn seeds to sprout, and patience will usually pay off in gardening. Don't be surprised if it takes several weeks (or even two months) for some tiny seeds, like peppers and eggplants, to sprout.

110 FIND WILD FOODS

Foraging is the oldest bushcraft skill of all; human beings have been foragers far longer than we've been hunter-gatherers or farmers. Wild edible plants can't always meet your nutritional needs in every place and season, but it's still important to know what to put on your plate, to avoid poisoning yourself, and to prepare your wild foods correctly. With study and careful exploration, you too can become a skilled forager.

If you've never collected your own food before, it may be thrilling or frightening (or a bit of each). Some people feel like they are taking control of their sustenance and their life for the first time, while others feel like they are taking their life in their own hands. Both are true.

GUIDE YOURSELF It's an empowering thing to harvest a meal for yourself, but you are also taking a risk. The devil is in the details, so pay attention to the little things. Bring reading glasses or a small magnifying loupe when you go out to harvest. Bring a field guide that contains your local edible and poisonous species, with detailed descriptions. Use the information it contains to stay safe.

EAT HEALTHY The time you spend can be very rewarding, as you learn to safely harvest rare and succulent edibles. And when you're in the right place at the right time, nature's bounty is open to you. Just a little bit of work (and a lot of attention to plant details) can get you an armload of edibles. Who needs vitamin tablets when you can get a wealth of vitamins and minerals from your wild meals?

111 FORAGE SAFELY

It's important to take some basic precautions as you set out to sample local plants.

CHECK CAREFULLY The basis of plant identification is checking a plant's features against a guidebook (or your own knowledge of the species) to be sure you know what it is, and whether it's edible.

BEWARE OF ALLERGIES Wild plants aren't there just to munch upon, and some can be very dangerous to humans. You may still have an unusual reaction to a widely tolerated plant food.

112 BE A GOOD STEWARD

It's easy to think of the great outdoors as your own personal grocery store when you first take up foraging. And in the beginning, it's very easy to over harvest—especially since everything is free. It's also easy to fixate on your own wants. If you harvested all of the edible plants in an area today, would there be more for the future?

PICK YOUR PLANTS WISELY Be a guardian to the landscape. Pay careful attention to the plants around you; your presence can benefit your local wild spaces in return. For example, when you discover an abundant delicious wild edible like garlic mustard, take all you can. This tasty weed is invasive, and can choke out native plants.

RESTOCK THE REGION You can also find out which native plants are missing from an area, and collect (or purchase) edible plant seeds to spread as you hike around. You'll have a future crop, and others can use the plants too.

113 MAKE SURE IT'S SAFE

There are plenty of things that can go wrong when you are foraging, but you can do a lot to minimize risk by following the basic rules of identifying and harvesting wild edibles.

STEP 1 Use a field guide to make a 100 percent positive identification of the plant or plant part (nut, berry, flower, etc.).

STEP 2 Cross-reference your research just to make sure there aren't any dangerous look-alike species.

STEP 3 Research the right way to use the plant, which parts are safe to use, and when to use them if seasonality is a factor.

STEP 4 Learn which plants should be eaten in moderation and which will require any special preparation to eat at all.

STEP 5 Reduce the risk of allergic reaction by eating only small amounts of plants that are new to you, and try just one new food per day (after you make a 100 percent positive ID).

TOP TIP

If you even have a hint of doubt that something doesn't look quite right about a plant you are sizing up, then absolutely do not eat it.

114 KNOW YOUR NUTS

Tree nuts are a great source of calories when you're out in the wild, but you have to know which ones to look for and how to make them ready to eat.

ACORN

Many native peoples in the northern hemisphere ate acorns as a staple food prior to agriculture. These are high-carb nuts with some fat and a little protein. The bitter acid in them is easily removed by cracking them into pieces and soaking the acorn nut meat chunks in repeating baths of warm water, 1 hour at a time, until the bitterness is gone. Don't boil them—it locks in some of the bitterness.

BEECH

These tree nuts can be a valuable and delicious wild food source, but you'll have to be quick, as squirrels seem to favor them above all others. Look for the smooth-barked trees in eastern woodlands, and keep an eye out for the small three-sided seed falling out of a prickly husk around early October.

HAZELNUT

There are several species of hazelnut tree in Europe, Asia, and North America. The most common tree in the U.S. is the American hazelnut, which grows east of the Mississippi from Georgia to Maine. Hazelnuts are relatively rich in calories and are also a good source of vitamin E, thiamine, copper, and manganese.

BLACK WALNUT

Black walnuts look like green tennis balls on the tree, but their rough, round husks turn to a very dark brown as they lie on the ground in fall. The nut meats are high in fat, with a fair amount of protein, magnesium, phosphorus, copper, and manganese. Wild animals might even let you have some, primarily because they don't like to chew through the bitter husks.

115 DON'T EAT THESE

There are at least two major species you should avoid when foraging for nuts. The first is buckeye, which, like hickory, has a "double layer" nut shell—a husk that peels off with a hard nut shell underneath. Buckeyes have a shiny brown shell underneath the outer husk, while hickories have a dull tan-colored shell. Hickory has a complex inner structure like a walnut, while buckeye has a solid meat like an almond.

CHESTNUT

Part of the beech family, these deciduous hardwood trees and shrubs are found throughout temperate regions of the northern hemisphere. The nut is contained in a needle-covered cupule, also known as a "burr." These burrs often grow in pairs or clusters, and each burr can hold one to seven nuts. Chestnuts are less calorie-dense, but are a good source of vitamin B6, vitamin C, and potassium.

HICKORY

The most calorie-dense wild food in our gallery, the hickory is packed with life-sustaining fat. Most varieties taste like their most famous relative, the pecan. These sweet and fatty nut meats can be eaten right out of the shell or cooked in a number of ways. From porridge to cookies to a crust for your favorite game bird, hickory is an underused hero in wild foods.

116 DINE OFF A PINE

The nuts of any large pine tree are a classic Native American survival food, and an important food around the northern hemisphere. Pine nuts are more than half fat by weight, with some protein and carbs added in for good measure. They're also a good source of thiamine and manganese, with a decent array of other B vitamins and several minerals.

CRACK A CONE Generally speaking, the larger the pinecone, the bigger the seeds. And it usually takes some work to tear open a cone. Some species will open by the heat of a fire, but most won't; you'll have to tear them open with pliers or a multi-tool. But with a nutritional profile like this, and a great taste, it's worth the work.

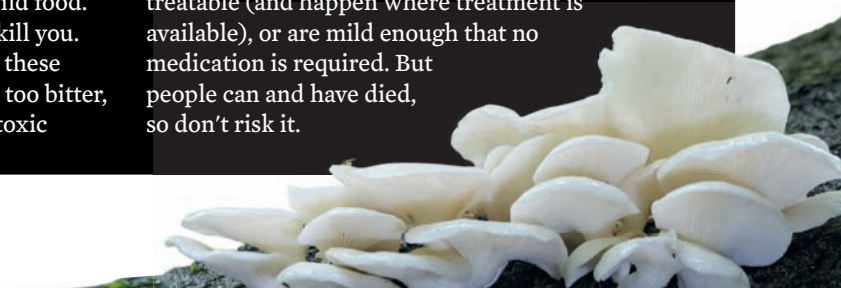
MAKE BARK FLOUR

Pine also has an edible layer to its bark. Shave off the rubbery, cream-colored inner layer of bark that's right next to the wood. Dry the strips out until they are brittle and grind them into flour. The flour will have a mild pine flavor and a fair number of calories. Extend your food supply by blending it with other flours.

117 AVOID FUNGUS

Sure, mushrooms can be delicious. And yes, it's like a treasure hunt to search for them in the wild. But are mushrooms a safe, reliable source of food for beginning foragers?

Of the world's 70,000 species of fungi, only about 250 species are considered to be a good wild food. Roughly the same number of species can kill you. Everything else is somewhere in between these extremes. Most mushrooms and fungi are too bitter, too small, or too tough to eat—or are just toxic enough to make you wish you hadn't eaten them. There are thousands of mushroom poisoning cases in the U.S. annually, and many, many more worldwide each year. Remarkably, it's rare for these poisonings to be fatal, as most exposures are treatable (and happen where treatment is available), or are mild enough that no medication is required. But people can and have died, so don't risk it.



118 GO GREEN

Looking to stock up on wild greens? Here are a few great examples of edible plants to pick.

CHICORY

This herbaceous perennial plant, native to Europe, is found across the hemisphere. Its leaves are similar to those of the dandelion. The blue composite flowers have ragged square edges to the rays. The leaves and flowers can be eaten, and the roots can be baked to make a coffee substitute.

WOOD SORREL

A common herbaceous perennial in the northern hemisphere. Stems and leaf stalks are alternate branching, and these plants are rarely taller than 6 inches (15 cm). The flowers are yellow, pink, or purple. The leaves, stems, and flowers can be eaten raw in salad, or steeped and sweetened to create a lemonade substitute. Be aware: Their sour taste is caused by oxalic acid, which can lead to kidney stones. Limit yourself to occasional use.

CHICKWEED

This herbaceous annual plant often forms a carpet on the disturbed ground of farms, gardens, and lawns. Native to Europe, it is now found in many places. The small, ovate, simple leaves grow in an opposite branching pattern on round, green stems with white flowers. The tender leaves and stems can be eaten raw (in the case of star chickweed) or cooked (if you happen to find mouse-ear chickweed). This plant can be used as a poultice for an anti-itch remedy, and can be eaten to relieve constipation.

SHEEP SORREL

This small plant grows very unusual spearhead-shaped simple leaves in fields and gardens. It is a perennial herbaceous plant that has a reddish alternate branching stem, up to a height of 18 inches (0.5 m). The leaves are typically small, about 1 inch (3 cm), and smooth edged, with a pair of lobes at the base of each leaf that may point outward or down. The tender, sour leaves can be eaten raw or prepared for a drink, similar to wood sorrel. And like wood sorrel, the sour flavor comes from oxalic acid, which should be consumed in moderation.

119 DIG SOME ROOTS

Some plants may not be too tasty above ground, but their roots can be a great wild food source.

PLANTAIN

A common weed in lawns worldwide, this annual herbaceous plant has parallel-veined, smooth-edged simple leaves that grow in a basal rosette. Torn, the leaves reveal stringy fibers inside the parallel veins, and have an astringent cabbage-like odor. The chopped young leaves can be added to salads or boiled as cooked greens. Seeds can be eaten raw or cooked and are high in B vitamins. Plantain is also a great poultice for insect stings and venomous bites.

WATERCRESS

An aquatic or semiaquatic plant native to Europe and Asia, this perennial is a relative of mustards and radishes. Watercress grows in fast, clean streams and springs, with hollow floating stems and pinnately compound leaves in an alternate pattern. The leaves and stems have a spicy flavor. Wash first if you eat them raw, as the water they grew in could bear pathogens. Cooked watercress is less tasty, but safer.

BURDOCK

To prepare this root, just wash it, chop it, boil the root pieces for about 5 minutes, change the water, boil again for 5 minutes, and then taste test for flavor. Burdock is a source of vitamin B6, and provides potassium, magnesium, and manganese.

TOP TIP

Need to dig, but lack a shovel? Do what humans have done for millennia: use a digging stick! A typical digging stick is 2 to 3 feet (0.6 to 1 m) long, and 1 to 2 inches (2.5 to 5 cm) thick, with a flat head point. Hardwood is best, as it is more durable. Use a skinnier stick in rocky soil to get between little stones and pebbles in the ground and a wider stick for loose or sandy soils. A digging stick is primarily used for loosening up soil.

JERUSALEM ARTICHOKE

Neither from Jerusalem nor an artichoke, this sunflower relative has a sweet tuber that contains iron, potassium, and a good dose of B vitamins. Look for the small sunflower-looking bloom in the fall at the tops of the tall plants.

WILD ONION

Roughly a dozen different species of wild onion grow in North America. But don't just wolf down any onion-looking plant; they are part of the lily family, which contains some toxic members. Look for the classic shapes of a bulbous root and a rounded stem of onion and garlic. Next, scratch the bulb or bruise the green tops, and you should immediately smell an oniony odor. If a few tears begin welling up in your eyes, all the better; you have an onion or garlic genus member for sure.

CATTAIL

Known as the "supermarket of the swamp," this plant's roots contain an edible white starch. Its shoots and the sprouts that grow on the roots are also edible. The leaves can be woven into baskets and twisted into ropes.

120 BROWSE NATURE'S GROCERY STORE

The wild holds a veritable cornucopia of edible fruits, berries, nuts, and more. Take a look at this chart to find out a little about each of the many offerings you can find in the wild that can provide a good amount of calories to your diet.

BLUEBERRY

CALORIES 84 calories per cup (100 g)

NUTRIENTS One cup contains one quarter of your daily vitamin C and one third of your vitamin K

WHERE These bushes and their relatives can grow in a wide range of temperate climates

WHEN Mid to late summer

TIPS Regular consumption is believed to improve vision, and eating dried berries can help stop diarrhea

CRANBERRY

CALORIES 46 calories per cup (100 g)

NUTRIENTS One cup contains one fifth of your daily requirement of vitamin C

WHERE Acidic bogs and wetland areas in northern latitudes

WHEN Berries ripen to red in autumn

TIPS Eating the berries is a widely used remedy to treat and prevent urinary tract infections

PAW PAW

CALORIES 80 calories per cup (150 g)

NUTRIENTS One cup has 18% of your daily recommended vitamin C and about 10% of your daily potassium

WHERE Floodplains and forests throughout the eastern and central U.S.

WHEN Late summer or very early fall

TIPS The wood is excellent for friction fire material, and the bark can be used as tinder and cordage

RASPBERRY

CALORIES 64 calories per cup (125 g)

NUTRIENTS One cup has 54% of your daily vitamin C and 12% of your daily vitamin K

WHERE Open areas throughout the northern hemisphere

WHEN Early to the middle of summer

TIPS Raspberries are a close relative of the blackberry, and their leaves can also make a tea

BLACKBERRY

CALORIES 62 calories per cup (100 g)

NUTRIENTS A cup has 50% of your daily vitamin C and 36% of your vitamin K

WHERE Open ground and woodland edges, throughout the northern hemisphere

WHEN Early to the middle of summer

TIPS Blackberry leaves can be dried and steeped as a tea that has a mild taste and helps treat diarrhea

WILD STRAWBERRY

CALORIES 45 calories per cup (200 g)

NUTRIENTS One cup of berries will give you more than a full day's supply of vitamin C

WHERE Woodland areas in North America

WHEN A very short season in late spring

TIPS Don't be confused by the Indian strawberry, which is still edible, but completely flavorless

ELDERBERRY

CALORIES 106 calories per cup (100 g)

NUTRIENTS The berries are high in vitamin B6, vitamin C, calcium, iron, and potassium

WHERE Sunny areas, throughout the northern hemisphere

WHEN Early to mid-summer

TIPS Don't munch on the leaves, stem, or green berries; most parts are toxic except for the ripe berries

DANDELION

CALORIES 25 calories per cup (75 g)

NUTRIENTS Loaded with vitamins A, C, and K, along with a small amount of most other necessary minerals

WHERE Disturbed ground, lawns, fields, and open areas, worldwide

WHEN Year-round

TIPS Use yellow flower heads in your salad or roast the roots as a coffee alternative

CHERRY

CALORIES 77 calories per cup (150 g)

NUTRIENTS 40% of your Vitamin A; 26% of your daily requirement of Vitamin C; and some potassium, copper, and manganese

WHERE Forest edges and old fields, throughout the northern hemisphere

WHEN Early, mid, or late summer, depending on the species

TIPS Don't swallow cherry pits or eat the leaves, as these are poisonous

PERSIMMON

CALORIES 127 calories per cup (225 g)

NUTRIENTS One cup provides a full day's vitamin C

WHERE Old fields and transition areas, throughout the eastern and central U.S.

WHEN Early to mid-fall

TIPS Pick only the wrinkled and gooey fruits; unripe ones give you a strong case of cotton mouth

BLACK WALNUT

CALORIES 760 calories per cup (125 g)

NUTRIENTS Significant amounts of magnesium, phosphorus, and copper

WHERE Old fields and forests in the eastern half of North America

WHEN The nuts are fully formed in early autumn, and may stay good well into winter

TIPS Outer husks can be used for dye and a tea that acts as a de-worming medicine

ACORNS

CALORIES 475 calories per cup (125 g)

NUTRIENTS Contains vitamin B6, folate, copper, and manganese

WHERE Woodland and temperate habitats throughout the northern hemisphere

WHEN Autumn, with nuts sometimes wintering over into spring

TIPS Remove the shells and soak in water to remove tannic acid

GRAPES

CALORIES 100 calories per cup (100 g)

NUTRIENTS Wild grapes provide good amounts of vitamin C, vitamin K, copper, and potassium

WHERE Woods and wood edges, throughout the northern hemisphere

WHEN Mid-summer to mid-fall

TIPS Grapes have one to four teardrop-shaped seeds, while the toxic moonseed has only one seed which is curved and flat

ROSE HIPS

CALORIES 162 calories per cup (100 g)

NUTRIENTS One cup provides the vitamins A, C, E, and K, as well as some calcium, magnesium, and manganese

WHERE Sunny areas, throughout the northern hemisphere

WHEN Early fall

TIPS Rose hips are a powerhouse when it comes to vitamin C, containing seven times your daily allowance in one cup

AMARANTH

CALORIES 716 calories per cup (250 g)

NUTRIENTS There are 26 grams of protein, 30% of your daily calcium, and a full day's iron in one cup

WHERE Fields and open ground throughout North America

WHEN Late summer or early fall

TIPS Seeds can be boiled into a cooked grain or ground into flour; the leaves are edible raw or cooked

WILD RICE

CALORIES 170 calories per cup (250 g)

NUTRIENTS Traces of many vitamins and minerals, and 7 grams of protein

WHERE Wetlands, throughout the northern U.S. and southern Canada

WHEN Early fall

TIPS Harvest from an open canoe, bending the seed heads into the boat and tapping them with a stick

121 TRY A DANDELION

The lowly dandelion is a familiar lawn weed with a basal rosette of leaves. The flower stems are smooth and hollow, and each one bears a solitary yellow head consisting solely of ray flowers, which later produces a puff-ball seed cluster of numerous single-seeded "parachutes." The plant has a deep taproot. The leaves are highly variable and may be nearly smooth-edged, toothed, or deeply cut. Dandelion grows wild in most of the world, typically in full sun conditions; and it is also completely edible. The young leaves of dandelion can be eaten raw before they become too bitter. The blooming flowers can be peeled of their down-pointing green sepals to be eaten in salads or fried as fritters. The leaves and flowers pack a massive dose of Vitamins A and C, as well as a strong flavor. The larger leaves, along with buds and roots, can be cooked in many ways to become tastier. The roots can even be roasted to create a coffee-like beverage.

122 HAVE A MINT

There's a practical reason many restaurants provide tasty little mints after your meal: the mint oil in the candy will sooth your stomach in cases of overindulgence or indigestion. People have been using mint for thousands of years. The special ingredient is menthol, an organic compound with counterirritant qualities. It is widely used to relieve minor throat irritation and nausea. Peppermint is an excellent choice for a soothing tea to calm an upset stomach. It isn't native to North America, though it can be found growing wild now from coast to coast. Add a little over 2 ounces (15 g) of dried leaf, or 4 ounces (30 g) of fresh leaf to a cup (240 ml) of hot water, cover, and steep for 10 to 15 minutes. This tea also helps with hangovers. There is a warning that comes with it, so keep in mind that pregnant or nursing women, anyone with gastroesophageal reflux disease (GERD), or anyone with liver disease should avoid ingesting strong peppermint teas (or mint oils) on a regular basis.

123 MAKE HARDTACK

This rock hard cracker isn't just cowboy food in the Wild West. It dates back to ancient Egypt, and has been eaten by travelers and soldiers for thousands of years. The recipe is fast and easy.

STEP 1 Blend 5 cups (600 g) of wheat flour (all-purpose flour is perfect) with 2 cups (480 ml) of water and 3 teaspoons (40 g) of salt. That's all you need! Mix the wet and dry ingredients thoroughly until you have a stiff dry bread dough.

STEP 2 Try a rolling pin to create a flat sheet of dough, or pat it flat with your hands, until you have a half-inch (1.25-cm) thick sheet of dough.

STEP 3 Cut your dough into small squares and poke each piece several times with a fork, on both sides. Bake them on a dry cookie sheet 30 minutes per side at 375˚F (190˚C), for a total of one hour baking time.

STEP 4 Once cool, store your hardtack somewhere dry. It can be a bit tough on the teeth. Soften it in water, coffee, soup, or—the sailor's choice—rum. Hardtack takes getting used to, but it's a way to store flour for years, and you can grind it back into a coarse flour-like substance to thicken soups. You can also mix it with fresh flour to bulk up supplies if they're running low.

124 BAKE A FRUITCAKE

Fruitcake usually makes people think more about the holidays, but this trail-ready food has been helping people survive for centuries. These cakes have typically been made from flour, honey, spices, and fruit—a recipe hailing from Roman times—but here's a more modern version.

STEP 1 Gather together 4 cups (1 l) mixed dried fruit (the majority should be golden raisins for the classic taste), 1 cup (240 ml) self-rising flour, 1 can (400 g) sweetened condensed milk, ⅛ cup (120 ml) water, one egg, and a dash of rum.

STEP 2 Place the fruit and water in a pot, and bring to a boil. Simmer uncovered for 2 minutes. Cover and cool to room temperature.

STEP 3 While the fruit cools, line a deep square or round baking tin with parchment paper (made for baking), bring the paper ½-inch (1.25 cm) above the edge of the tin, and preheat the oven to 300°F (150°C).

STEP 4 Add the condensed milk, egg, and then the flour (and rum, if using) into the pot of fruit. Mix thoroughly, spoon the batter into the prepared tin, and bake for 2 hours.

125 DRY SOME MEAT

The only guarantee of eating in the wilderness is when you bring your own food along for the journey. From antiquity until today, jerky is one of the most popular and universal trail foods you can find. You can even make it yourself, just like our ancestors did.

START FRESH Cooked meat is not suitable for jerky. Red meat is the best choice, though any mammal, bird, fish, or larger reptile meat will also work.

TRIM AND SALT Slice your pieces less than ¼ inch (0.5 cm) thick, and cut perpendicular to the grain of the meat. Trim off all visible fat, as it will go rancid in the dried meat. While the meat is still juicy, sprinkle on a little salt or spices. Salt will create a less hospitable environment for bacteria.

SMOKE IT Dry the meat by hanging on a rack near a small, smoky fire. Don't cook it. Just dry the meat until it becomes brittle, then store it in a dry place.

126 HARVEST PRECIPITATION

Water can be found in a surprising number of places, and disinfected in many different ways. Take this section to heart, and you'll never take water for granted again.

RAIN This is the most efficient source of clean water, clean as the air it formed in. It requires no further purification if you catch it in a clean container under an open sky since it is fresh, distilled water. In a jungle or forest, I disinfect rainwater that I have collected under the canopy. All those tree leaves and branches are the bathroom for all the birds and bugs that live up there. After a long rainfall with no disinfection methods available, I would consider the canopy "washed off" and drink rain collected underneath, but it should still be disinfected if at all possible.

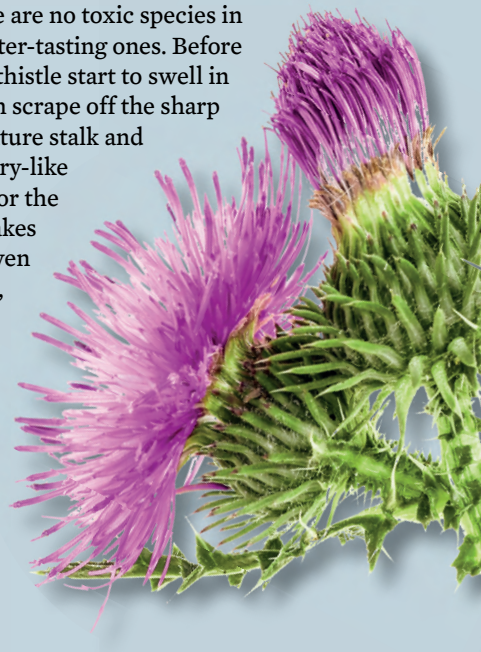
SNOW The frozen stuff requires more consideration than rain, as it needs to be melted and perhaps disinfected. Fresh snow is likely safe but old snow could be contaminated. Don't eat snow—it leads to hypothermia. Melt the snow in a pot near a fire; sleet and hail can be collected similarly.

DEW AND FROST Dew is only as clean as the surface it collects on, so it should always be disinfected. Dew and frost are best collected before and around sunrise in low lying areas. It can be sopped up with a cloth, a sponge, or a bundle of dried grass.

127 GET WATER FROM PLANTS

If we've learned anything about the wild from watching cartoons, it's that we can chop the top off a cactus and have a cool drink of water in the desert. Bad news: It doesn't work like that. Cacti have moisture inside just like every plant, but not liquid water. However, the cartoon artists weren't too far off. Some plants and trees really can be sources of water at certain times of year. This is seasonal and shouldn't be relied upon, but when it does work, it's amazing. Water from plants usually doesn't require purification, although it never hurts to be safe. Here's a breakdown of when and how to get water from plants.

THISTLE Many different species of thistle are scattered across the northern hemisphere, with plenty in North America. There are no toxic species in the U.S., just a few bitter-tasting ones. Before the flower heads of a thistle start to swell in early summer, you can scrape off the sharp spines from the immature stalk and munch on it for a celery-like treat, or just chew it for the water it contains. It takes several stalks to get even a few ounces of water, but by chewing the stem and swallowing only the juice, you're getting water.



FRUITS Edible berries can be a water source when they are in season. Fill up a clean bandana or similar cloth with a pile of berries. Twist and squeeze the bundle over a clean container and the juice will pour in. The pulp and seeds can be spread out to dry and be eaten later, once a water source is secured. Remember that you shouldn't be eating if you have nothing to drink.

128 DIG FOR A DRINK

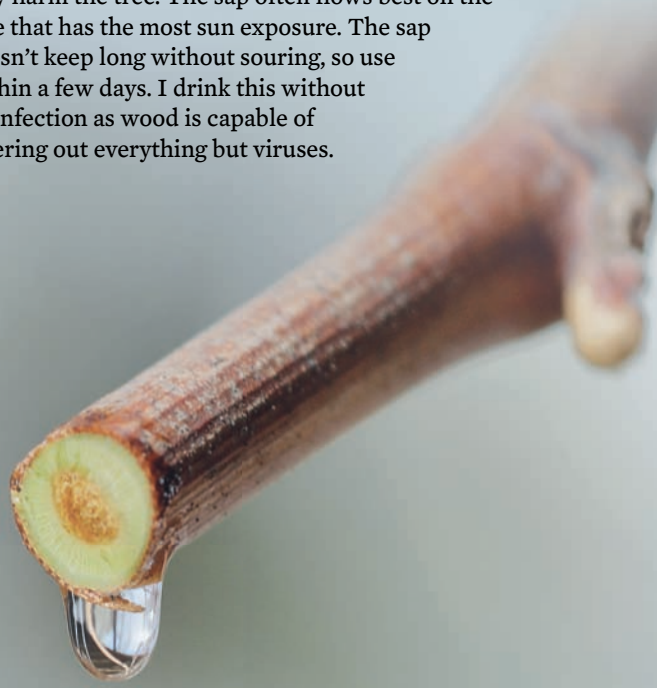
How do you find water when none is at the surface? When your hike downhill hasn't panned out, find the lowest, dampest spot you can and commence digging.

GO UP A CREEK It is not unheard of to find water in the soil of dry creek beds and other low-lying areas. Deciduous trees are a good sign that there may be water near the surface in a low point nearby. When you hit moist soil, keep digging. The hole should soon start to collect muddy water. Once water starts to appear, let the moisture seep into the hole and allow the mud to settle.

HIT THE DUNES A beach is a good place to dig for water. Even if no freshwater streams appear to be flowing into the ocean, experiment by digging holes beyond the beach dunes. In the low spot behind the first or second dune, dig down until you barely hit water. You may find a layer of freshwater on top of the salty groundwater. This is rainwater that has been preserved, since the dry sand above it prevented evaporation. This doesn't work everywhere and at every time of day as the tides can impact the presence of freshwater. Experiment with the depth, location, and timing of your "rain well" and taste-test for salt. If it's even half as salty tasting as sea water, find another spot or don't dig as deeply.

TREE SAP Maple trees have a watery sap that is used to make maple syrup and is safe to drink (except the introduced Norway maple). Sycamore, birch, walnut, and hickory can also be tapped for drinking water or sap to boil down for syrup. The sap flows in late winter and early spring when the nights are below freezing and the days are above. Drill a hole through the bark and into the wood. Insert a tube to collect the water, or use a twig to guide sap to drip into a container, and then leave it there. Don't use a copper pipe or tubing, as this may harm the tree. The sap often flows best on the side that has the most sun exposure. The sap doesn't keep long without souring, so use within a few days. I drink this without disinfection as wood is capable of filtering out everything but viruses.

VINES Grape vines can yield water throughout the spring in the northern hemisphere, as can vines in the tropics. Be sure you have a good field guide to woody plants to identify the right species. Small vines about a half inch (1 cm) in diameter can be cut a short distance above ground and will drip water for some time. Larger vines can have a notch cut in them and will gush out water from the cut (when the sap is running).



129 KNOW YOUR MEDICINAL PLANTS

People have been collecting and cultivating these helpful plants for centuries or millennia. In modern times, the cultivation and use of healing plants may represent a much healthier alternative for the homesteader crowd, as well as a sustainable resupply plan for preppers and bug-out enthusiasts. While all these home remedies should not take the place of any professional medical care, it's still nice to have a sense that you are not helpless, should you end up having to fend for yourself.

LEMON BALM

This makes an outstanding topical agent for cold sores. Crush the fresh leaves and bind them over the sores—or use a cream with a high concentration of lemon balm.

BLACKBERRY

Yes, the berries are delicious, but did you know that the blackberry leaves are helpful for diarrhea? Make an infusion (like a tea) by pouring near-boiling water over the leaves and let steep 5 to 10 minutes. The usual amount to use is about 2.5 ounces (75 g) of fresh leaf, or 1 ounce (30 g) of dried herb to one cup (240 ml) of hot water. The infusion must be taken the same day.

LAVENDER

Used since ancient times for bites, burns, and skin disorders. To relieve itching, rashes, and swelling, apply crushed fresh leaves to the affected area. You can also make an infused oil. Fill a jar with dried leaves and cover with olive oil. Allow to soak for 6 to 8 weeks, then decant. It's not recommended for pregnant or nursing women, or small children.

COMFREY

Cooked, mashed roots are a topical treatment for arthritis, bruises, burns, and sprains. (Avoid ingestion, as consuming this herb can potentially damage the liver if taken in large enough quantities.) Simmer the fresh peeled or dried root, about 3.5 ounces (100 g), in 1 pint (500 ml) of water for 10 to 15 minutes, then mash into a paste and apply to the injury.

YARROW

Crushed leaves and flowers can be placed on cuts and scratches to stop bleeding and reduce the chance of infection.

BURDOCK

The roots and leaves make an excellent liver tonic and help to purify the body and blood. Make a tincture of the dried root in alcohol and consume 10-20 drops daily. You could also eat the fresh leaves and roots (after boiling in water and discarding the water to remove bitterness).

ECHINACEA

If consumed at the first sign of cold symptoms, this can reduce the effects and duration of the common cold in adults.

PLANTAIN

While not quite strong enough to tackle snake bites, plantain can still help neutralize the venom of bees, wasps, scorpions, or other pain-inducing creatures. Just keep the paste of plantain leaf on the wound and replace as it dries out. Relief should be swift.

ELDERBERRY

This may shorten the common cold, and have anti-inflammatory, antiviral, and anticancer properties. Eat jam or wine made from elderberries. The raw berries are mildly toxic and may have drug interactions with diuretics, diabetes medication, laxatives, theophylline (TheoDur), or immune suppressants.

BIRCH

Birch bark, particularly the bark of the Sweet Birch, can be an effective analgesic. The bark is scraped from the tree's twigs before being brewed into a tea. Add ¼–½ teaspoon (1–2 g) of bark to about 7 ounces (200 ml) of water and then boil for ten minutes. This tea can be taken up to five times per day.

JEWELWEED

This stuff is a great cure for poison ivy, poison oak, or poison sumac. Crush the juicy, purplish-colored stalk into a paste, and briskly scrub it all over the affected skin. After two minutes of contact, wash off the mush with clean water. If you found and used jewelweed within 45 minutes of exposure to ivy, oak, or sumac, you should have little to no reaction.

130 DON'T DIE FROM DIARRHEA

Our bowels can stage a revolt for a wide variety of different reasons. A viral infection, tainted food, bad water, or unsanitary living conditions can each cause a dangerous case of diarrhea and, during an emergency situation, you will likely have enough problems without worrying about colon control and dehydration. Luckily, relief is close at hand. In the world of traditional medicine, you can brew an anti-diarrhea tea. Woody canes in the genus Rubus (such as blackberries) produce thorny leaves that are often used as an herbal tea. This tea also contains at least one compound that can help to dry up diarrhea. Make a strong tea from the dried leaves, and drink one cup (240 ml) every couple of hours, until you notice a positive change. If this isn't strong enough, then you can also use blackberry roots for a tea, sipping it in comparable amounts to the leaf tea.

131 STOCK UP ON WATER COOLER JUGS

Aside from breathable air, potable water is the next major thing your body needs to keep going—on average, you'll only live about three days before succumbing to dehydration, so in a disaster scenario, you'll need all the supply you can get your hands on. Grab a few water-cooler jugs ahead of time for yourself and your family, and store them safely in case things get bad.

- THESE ARE AMONG THE FEW "CHEAP" DISASTER PREPARATIONS.
- IT'S SAFE FOR YOUR WHOLE FAMILY.
- WATER IS EASY TO RATION INTO SMALLER PORTABLE BOTTLES.
- THE CONTAINERS ARE REFILLABLE (AND EMPTIES ARE AVAILABLE TOO).
- EACH OF THESE IS 5 GALLONS (19 L) AND THE CONTAINER CAN LAST INDEFINITELY IF PROPERLY SECURED.

132 DON'T BE MISLED

There are plenty of myths about water in survival situations. These tall tales circulate in movies, books, even cartoons. Before you put too much faith in these pop culture practices, discover what is real and what is not.

CACTUS WATER

MYTH Based on my intense study of historic cartoons (particularly Bugs Bunny), you can just chop the top off a cactus and it will be full of cool clear drinking water.

REALITY While cacti do contain water (as do all plants), they are hardly a bucket of drinkable H_2O. In fact, that cactus is more commonly filled with a bitter gelatinous pulp that would make you sick if you tried to consume it. Instead, you should learn to identify trees and vines that will actually deliver drinking water in the springtime and other seasons.

RATIONING YOUR WATER

MYTH Rationing your water is critical, especially in the desert. If you drink all of your water, your body will just waste it!

REALITY Dead people have been found in the desert, with water still in their canteens. Despite literary and TV examples of rationing water in emergencies, the best place to store your water is in your stomach. In a harsh situation, your body knows what to do. It will automatically concentrate your urine, dry up your feces, and thicken your blood to survive.

DRINKING YOUR PEE

MYTH Many survivalists believe that it's okay to drink urine when you run out of water. They've even seen it on TV survival shows, so it must be true!

REALITY Hold on a minute, pee drinkers! Before you chug that golden glass of urine, understand that it has a dangerously high salt level, comparable to sea water. Drinking either of those will alter your electrolyte balance and cause very adverse physical reactions. Don't do it.

133 BUY A WATER BOB

The waterBOB is a remarkable prepper product that is well worth the trouble of tracking down. It's a large plastic bladder, sized to fit into a standard bathtub (dirty or clean) and it holds up to 100 gallons (380 l) of sparkling clean water (no nasty bathtub taste). To use it, just unroll the plastic catchment bag inside your tub and attach the fill sock to the faucet. Fill the bladder to capacity and close it. In 15 or 20 minutes, you'll have a massive water reserve that is clean and protected from contamination by activities in the bathroom or your unsavory bathtub residue. To get the water out, the kit also includes a siphon pump, which you can use to dispense the water easily into bottles, jugs, or other containers. You can also use it in odd shaped bathtubs, since the heavy-duty 10-mil food grade LLDPE plastic can handle the pressure.

134 DON'T DRINK DIRTY WATER

A sip of raw water may not seem dangerous, but what if it carried the wrong organisms into your body and you were without modern medical care? There are four main groups of pathogens and parasites that we don't want to ingest in water.

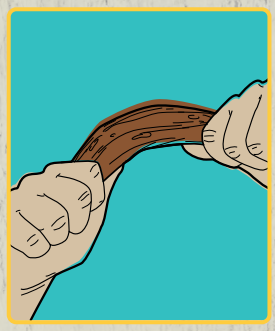
The virus is the smallest of all pathogens, with more than 100 known species that are transmissible through drinking water. Common waterborne viral diseases include rotavirus, enterovirus, norovirus, and hepatitis A.

In addition, bacteria commonly enter the waterways through dead animals in the water—and also through animal and human feces. Those pathogens that can be transmitted by water include Cholera, Salmonella, Campylobacter, Shigella, and Staphylococcus aureus.

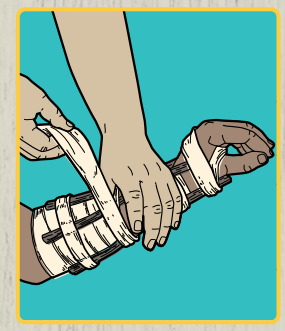
Cryptosporidium and Giardia are also two of the most common protozoan pathogens found in raw water.

135 CREATE A CAST

A broken wrist or a fractured forearm may not be a killer, but can be excruciatingly painful and a major impediment in the field. These injuries need to be stabilized and supported to reduce the pain and limit further damage. If you can't get out of the backcountry to the doctor or there is no access to medical care in a disaster, you can try a very old technique: the mud cast.



1 FIND SOME MUD Check out riverbanks and other wet areas for clay that is moist and ready to go. Test the quality of the clay by rolling the mud into cigar-shaped pieces and bending them. The more they flex without breaking, the better they will work for the cast. You'll need about 1 quart (1 l) of clay-rich mud for a forearm cast, and more mud for bigger casts.



2 WRAP THE LIMB Rolled gauze is a great medical item, but any cloth will work for the initial padding. Wrap strips of cloth around the injured limb and add a few sticks for stabilization. Wrap over the sticks to keep them in place. Put a ball of cloth or gauze in the hand to pad it as well. Place the wrist in a "position of use," which means the back of the hand is slightly lifted.

3 MAKE LAYERS Begin to add a layer of mud over the cloth, and add additional strips of cloth. Rolled gauze is excellent for this, as the mud will squish through it. Add more layers of mud and fabric until the desired size and shape are reached (roughly the size and shape of a normal cast).

4 USE A SLING AND SWATH For any arm casts, improvise a sling from available materials or use a cravat. Place the arm in the sling and allow the cast to dry. For additional support, you can tie a long bandage around the entire limb and torso (swath). Once the mud has dried, this crude but effective cast will be much heavier than a modern orthopedic cast. However, it is very supportive and can be made from available materials in almost any location.

136 MAKE A POULTICE

A poultice is about as old-school and simple as it gets. You're just smashing up a plant and applying it directly to the problem area. This is used primarily on external problems, but it could be held in the mouth for gum or tooth problems if the poultice material is nontoxic. To make a poultice, crush (or chew) the plant material into a pulp or paste, and apply it directly. Keep it in place with a bandage or some other type of dressing. Replace it with new material once or twice daily. Plantain is an excellent poultice for wounds, especially insect bites and stings. Other choices include curly dock root, comfrey root or leaf, and yarrow leaf.

137 BUILD A JACKET LITTER

When someone can't hobble on their own with a crutch, you may need to carry them to a safer location. You can make a great litter with two 8-foot (2.4-m) poles and two sturdy jackets. Just follow these simple steps.

STEP 1 Cut or scavenge two poles that are longer than your patient. These can be tree limbs, saplings, or other long rigid objects.

STEP 2 Turn the jackets inside-out, while leaving the sleeves on the inside. You could just pull the sleeves inside a jacket, but turning the garment inside-out means the zippers and buttons are on the inside, so they're not caught on rocks or bushes (and they're not poking your patient). Thick shirts, coats, or other clothing can be used too.

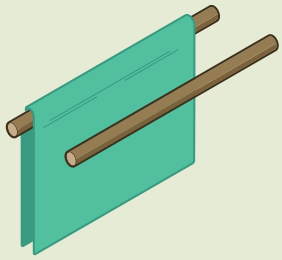
STEP 3 Slide the poles through the jacket sleeves, load up your patient, and carry them to safety. Be very careful not to drop them!

138 MAKE A CRUTCH

Sticks and branches are available in most places on Earth. Deserts and grasslands have woody shrubs and trees growing throughout them or along waterways—even the arctic has driftwood. And whether your wood is dead or it's a green branch, if it has a fork at the top, you can make a fully functional crutch with only a little bit of work! Your crutch should be about 4 feet (1.2 m) tall, for most folks of average height. The fork should be heavily padded with clothing or some other soft material. A bit of foam sleeping pad can work, too. The broader the angle on the fork, the more comfortable the crutch.

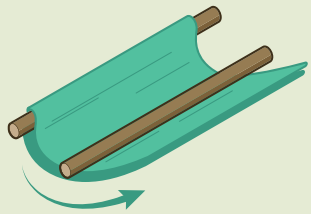
139 TRY A TARP

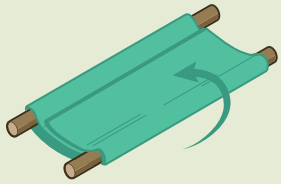
Similar to the jacket litter, you can make a different kind of improvised litter using two poles and a tarp (a large blanket will also work). The best part: When your patient is placed on the litter, it's their own body weight that keeps everything bound together.



STEP 1 Start by laying your tarp out on the ground and placing a long stout pole in the middle. Fold the tarp over the pole so that it is doubled up.

STEP 2 Add the second pole so that it divides the tarp in half again.





STEP 3 Flip the tarp edge over the second pole, so that the litter now has four layers of material.

STEP 4 Have your patient lie down, and have two or four people lift the litter simultaneously.

Both the jacket litter and this one can fit into an urban survival setting, since metal pipes or pieces of lumber can be used instead of the tree poles. Whatever you use, make sure the combined strength of these two poles and tarp are more than adequate to carry your patient, with no risk of breaking or dropping them.

PART THREE

GETTING SETTLED

PART THREE

LEVEL UP

You may never build a temporary survival shack, let alone a permanent sustainable homestead, but it's still very important to learn about these topics. Shelter is one of the highest priorities in the realm of survival. Since survival is a natural extension of being self-sufficient, it only makes sense to learn this vital skill set, even if you only use it in your imagination. The ability to build shelters is one of the foundational skills of our ancestors. Originally, we might have seen animals build nests and then mimicked their work to create places shielded from the wind and rain. Later, we refined our ideas for protection and defense, creating structures that were both a haven and a home. As our forebears built self-reliant lives for themselves in new places using new materials, so the building techniques expanded and became more sophisticated. Today, we can take advantage of both heritage building skills and the latest modern materials and construction techniques. The impulse to build is innate and deep seated. While we won't all have the land and the opportunity to realize a childhood dream of building a little club house in the outdoors, we can still be fueled by the hope and the dream of it. Those of us who are dead serious will make that dream a reality.

140 DON'T UNDERESTIMATE THE LABOR

The worst form of estimation is underestimation. From the back-to-the-land movement of the 1960s and 1970s, to the modern tiny house movement, people have underestimated just how much labor is involved in a self-reliant lifestyle. It's a ton of work! This is why generations of people have fled the countryside and built their lives in the city—it's an easier lifestyle. This doesn't mean that one is better than the other, as they both have their merits and flaws. But it's obviously more work to crank a bucket of water up from a well than to turn the handle on a faucet. And you know it's harder to chop firewood and carry it around than to push a button on the wall thermostat. But don't forget: Self-reliance means that you are actually relying on yourself, and not someone else. Therein lies the beauty of it. You become the architect of your life, and you build it exactly how you like, one chore at a time.

141 BUY IF YOU CAN

Should you buy, rent, or lease? Renting is usually performed on a short-term basis, while leasing typically refers to a longer period of occupancy. The bad part with either is that you don't own the land, and there's no guarantee that you'll get to stay there for very long. You may park a trailer or tiny house there, put in a garden, and promptly get kicked out. All your hard work would then be lost. You won't be building a home on land that you don't own (unless you have a really unusual situation going on). If you're buying land by mortgage, someone else still owns the land (the bank) but still, you can pretty much do whatever is legal to do on the property. If you pay in full with cash, then it'll just be you (and to some extent, the government) in charge of the land. My advice is simple: Rent if you must; buy if you can.

142 CONNECT WITH THE OUTSIDE WORLD

If you're getting older or if you have some sort of health-related issue, you may not want to live too terribly far away from a hospital, or at least a small medical facility. This modern asset can be a life saver (no pun intended). Other useful elements of contemporary living can include things such as schools (if you have any children), shopping, gas stations, and restaurants. I know what you're thinking: "Restaurants? But we're going to eat all of our own food that we grow or hunt!" That's a fine goal, but here's the reality check: If you spend one too many days eating nothing but moose meat, you'll end up mounting your own head over the fireplace. Trust me—you're going to need a restaurant within a few hours' drive of your homestead. So here's your homework question. How self-sufficient can you really be (especially long-term), and what can you not live without (literally and figuratively)?

143 BE BUG-OUT COMPATIBLE

Perhaps you're one of those people who wants a piece of land for an emergency stronghold (also known as a bug-out location). An off-the-grid property can be the perfect solution, if it meets all of your group's needs. A bug-out friendly property should have great resources, such as potable water, wood, wild edible plants, and lots of game animals.

The piece of property shouldn't be so far away that you couldn't reach it on foot during a crisis. If you're not living there and working from the site, about a three- or four-day walk from your home or workplace is pushing the limits. Finally, the property should also be defensible by its occupants, just in case things get really rough for a while.

144 BUY A READYMADE HOME

If you're not building from the ground up (at least, not right away), what options do you have for shelter and what are their benefits and drawbacks? Here are a few of the most common and why you might want to consider them.

INSTANT HOMESTEAD Buying a piece of land with a house already built on it will be the quickest approach when you're establishing your independent lifestyle—and also the most expensive. Depending on the local real estate market, you may have plenty of properties to consider. Some might even be off the grid already. Try to find out the honest reason why the owners are letting the property go. Sometimes they just want to move back to the big city; other times, though, the land or shelter may have real problems, so do your due diligence!

YOUR HOME, ONLY TINIER The growing tiny homes trend has inspired plenty of books, lots of television shows, and loads of people worldwide who want to simplify their lifestyles. The inductees into this way of life are reducing their footprints, their utility bills, and their own burdens, to live in compact homes—many of which are also portable. For singles, couples, and small families without a shred of claustrophobia, this might be right for you.

MOBILE HOMES AND TRAILERS Plenty of folks already reside in trailer parks and mobile home neighborhoods, so either of these can be a good option for folks on a budget, especially if you can find a good used trailer. A new trailer can be like a new car: as soon as it's off the lot, its value takes a big hit. You may choose to live in a trailer while you're constructing a permanent home, or the mobile home itself could also be the end-all be-all. If the latter is the case for you, why not get the upgrade, such as a double-wide with a deck and carport?

YURTS For a tent, a yurt isn't actually all that cheap. But these Mongolian-inspired dwellings are quickly gaining traction within the DIY community. Yurts are round tents with an expandable wooden frame. Most modern versions include a skylight dome on the top, a woodstove pipe vent, and functional doors and windows. If you can't swing the cost of a yurt, then see about picking up a large military style tent that's woodstove compatible.

145 HAVE A PLAN

Planning your steps is just as important as your vision of the finish line. Just ask my friend about her family's plan to live in the woods while building their dream home. In the beginning, their family lived in a tent with two parents, three sisters, two dogs, a cat, a rat in a cage, and, very briefly, one grandmother who soon said "no way" and got an apartment in town. As the house-building efforts crept forward, the family moved on up to a trailer and, eventually, into their fantastic new house. Things ended well enough, but only after a couple of fairly challenging years. Remember to plan out both the small stuff and the big stuff during your preparations—unless you want to spend a long winter cooped up inside a wet tent alongside several fighting kids and multiple pets.

146 GO NOMADIC

The tipi is a marvel of design, capable of withstanding winds that would knock down a square structure. The secret is the round cone shape, which allows the wind to pass around it and the rain to efficiently run off of it. This portable shelter can even be set up or taken down by one person. Buy a higher-tech fabric version or craft your own from skins and poles.

147 UPCYCLE

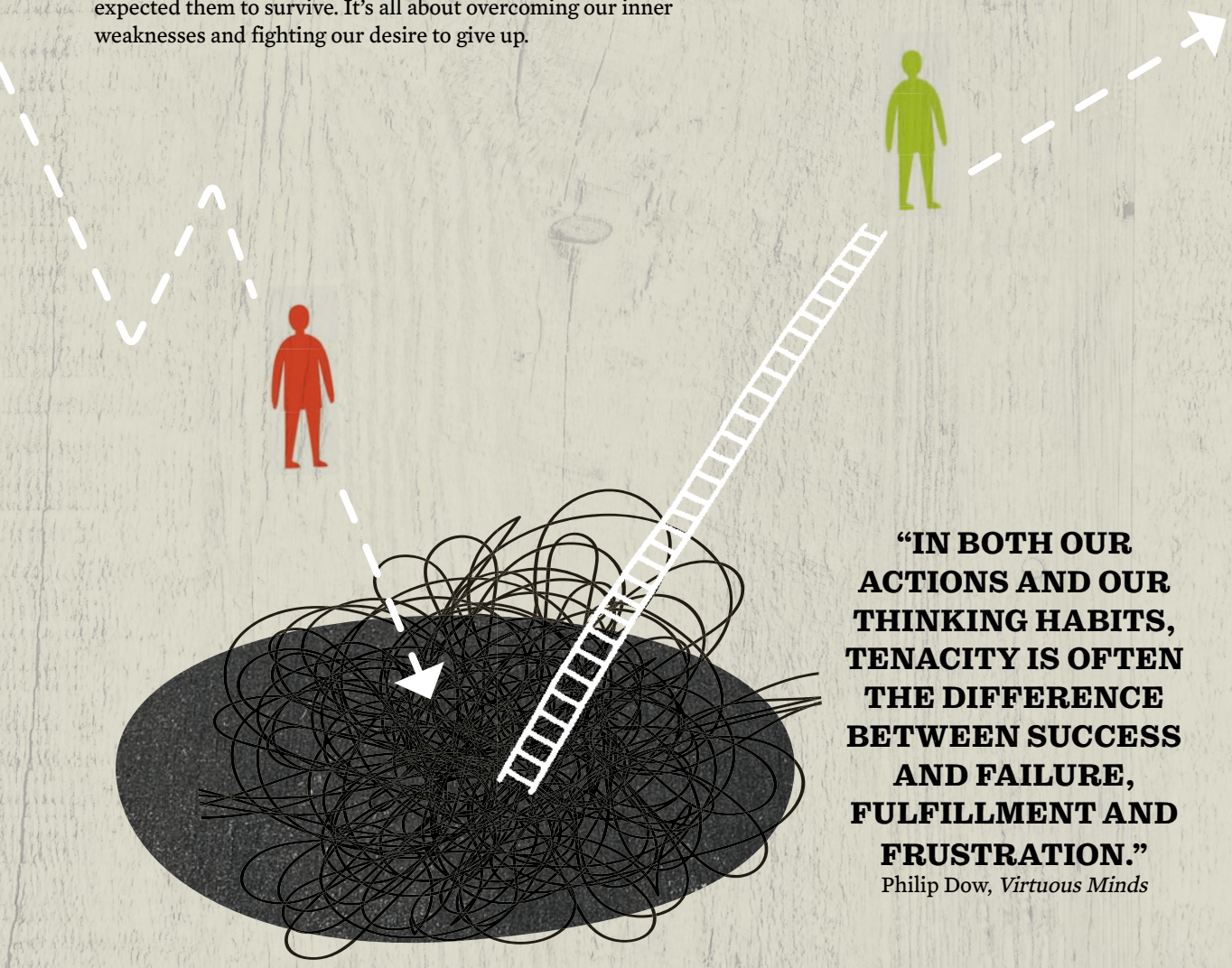
Tiny homes and yurts aren't the only options for living under your own power in a creative and meaningful way. All across the globe, people are taking shipping containers, metal grain bins, straw bales, and other unconventional items and turning them into homes. And this creativity is nothing new. In the mid-1970s, a college professor in California was able to build an entirely recycled cabin using castoff lumber, windows, and cardboard boxes. No, this paper palace didn't disintegrate in the first rainstorm. The cardboard was the heavy waxed stuff used for boxes that ship vegetables, and it was cut into squares for use as siding material and shingles—after being treated with a fire retardant material (as waxed cardboard is quite flammable), the cabin was cleared for residency.

148 BE TENACIOUS

Do you have the tenacity to endure, even when things are at their worst? Tenacity is a character trait that is either built up by hardships or broken down by them. You may not know what your "tenacity setting" is right now, but I guarantee that it will be revealed to you by uncomfortable circumstances. Whether you call it intestinal fortitude, resolve, or grit, this facet of your survival mentality is all about endurance. Can you hang in there, even when your hope has failed and the tasks ahead are hard?

Tenacity doesn't have anything to do with physical toughness or stamina. It's a manifestation of the strength of your will and the toughness of your mind. A truly tenacious person will push themselves to tolerate the intolerable, suffer through the insufferable, and survive the situation that no one expected them to survive. It's all about overcoming our inner weaknesses and fighting our desire to give up.

THE PROBLEM: A number of things can wreck our innate tenacity. Laziness is a common culprit. Rather than doing the hard work, we look for a short cut or we don't even try. This can be a serious stumbling block, but the one that worries me more is declining mental health. In a lengthy wilderness survival setting or in the wake of a major disaster, it's hard enough just to stay alive, let alone endure feelings of fear, loss, guilt, anxiety, or the myriad of other unhappy thoughts and feelings.



"IN BOTH OUR ACTIONS AND OUR THINKING HABITS, TENACITY IS OFTEN THE DIFFERENCE BETWEEN SUCCESS AND FAILURE, FULFILLMENT AND FRUSTRATION."
Philip Dow, *Virtuous Minds*

THE REMEDY: Emergencies can turn any given day (or week, month, or year) into one of the worst times of your life, so don't be surprised if you're not at 100 percent of your normal mental faculties. Once you factor in the stress, worry, fatigue, injury, dehydration, and lack of sound sleep you'll likely experience during an emergency, it makes sense that anyone would be struggling inside. Now that you know this, you'll want to watch yourself and your companions for signs of anxiety, depression, anger, frustration, hyperactivity, guilt, suicidal talk, and irrational behavior. Since professional mental health care and the right medicines are unlikely to be available in austere settings or major disasters, you'll need to do whatever you can for each other. Talk it out as much as you can, and find ways to cope until the situation improves. You can also fuel your tenacity by focusing on your motivation to survive. Think about the things and people you care about. Finding solace in your faith and hoping to be reunited with friends and family are major influencers in ugly survival situations.

149 RECOGNIZE STUBBORNNESS

We might think that being stubborn can be a good thing, for example, when someone is too stubborn to die, but under less dramatic circumstances, your stubborn streak can cause more harm than good. Tenacity and stubbornness are not the same thing. Here's the difference. A tenacious person won't give up, and they will keep trying different things until they find one that works. A stubborn person won't give up either, and they keep going too–with the same course of action (even after they realize their chosen method is ineffective or just plain stupid).

Stubbornness is a refusal to adapt or change course once you've made a decision or invested yourself in a course of action. It can also manifest as an inability to work with or take direction from others. It's very simple to identify, but a little harder to pick apart. Maybe you were born with a stubborn streak as part of your personality. Maybe you've developed an ego problem over the years (and you don't believe you can fail, so you keep doing the same thing over and over). Maybe you're a full blown narcissist and don't think you've ever had a bad idea. Whatever the root cause of the problem may be, just remember this: you shouldn't quit, nor should you doggedly hang onto something that isn't working. Don't be afraid to change your tactics if something you try is a flop. Don't let your stubborn streak kill you or kill someone else.

"NEVER GIVE UP, FOR THAT IS JUST THE PLACE AND TIME THAT THE TIDE WILL TURN."
Harriet Beecher Stowe

PUT IT TO WORK!

There are a few ways you can unplug the stubbornness in yourself and work with others who are being stubborn. We all should be confident in our own abilities and knowledge, but we also need to be able to recognize when we have made a mistake or hear a better idea. By embracing flexibility, we can better deal with both our own issues and the stubbornness of others. Realize that there can be more ways to get a job done (besides YOUR way to do it). Experimentation can also be useful. If possible, measure the effectiveness of your chosen idea then try something different for comparison. Commit to choosing the better idea, and don't let stubbornness get in the way of your progress.

150 BUILD A LOG CABIN

Heroes of the colonial American frontier, such as Daniel Boone, Simon Kenton, and pretty much every other settler of European descent, built their own cabins from logs in the eastern woodlands. All you needed was a strong back, an axe, a few other hand tools, and a pocket full of nails to build a small home for very little money (FYI, most settlers were flat broke). If logs are an abundant resource in your area, you can follow in this great American building tradition by creating a small shed or even a small home from locally harvested logs. Here are a few key factors.

FOUNDATION Some early cabins were built right on the bare ground (not a great idea in wet or termite-infested areas). More sophisticated techniques came later, such as stone walls for perimeter foundations and stone blocks for piers under the structure. Today, we could use any number of foundation methods on a modern cabin, including concrete slabs with integrated hot water heating.

DOORS & WINDOWS It's tempting to try to create doors and windows by leaving openings while building the walls. This is very unsteady and dangerous. Door and window openings should be cut in with a chain saw and braced for strength if necessary—only after the walls are complete.

CHIMNEY For traditional log homes with fireplaces (or more modern builds with a woodstove insert), you'll need to build a sturdy chimney. Original frontier cabins had chimneys of wood that were covered in mud as a partial fire-proofing. This is incredibly dangerous and should be avoided at all cost. Mortar and local stone are a more durable and far safer set of building materials.

WALL CONSTRUCTION Every log has a thick end and a thin end. When building your walls, alternate these ends to avoid building a crooked or lopsided cabin. Otherwise you'll become the laughingstock of your woodland community.

TOP TIP

Caps of metal flashing are a great way to block moisture from wicking into your log walls from posts and piers below. They also interfere with the travel of termites, a major concern for someone in an all-wood house.

YOU'LL NEED

TOOLS

HAMMER

STRING

DRAW KNIFE

AXE

BLOCK AND TACKLE SET

CHAIN SAW

HAND SAW

LEVEL

FRAMING SQUARE

POST HOLE DIGGER

ROPE

BUILDING SUPPLIES

- CONCRETE
- PLYWOOD AND LUMBER
- DOORS AND WINDOWS
- SHINGLES OR OTHER ROOFING MATERIAL

151 FELL TREES PROPERLY

Dropping a tree to the ground has many inherent dangers, both to people and property. Just look up "tree felling fails" on the Internet and you'll see pictures of people who have dropped trees on fences, trucks, and even houses. These mishaps are on the lighter side, but people, pets, and livestock have been killed by tree felling, so be sure nothing bad happens on your watch.

STUDY UP Understand that every tree is different, so assess each one before the tools come out. Study it carefully to identify lean, cracks, rotten areas, dead branches, dead tops, and other hazards.

CHOOSE THE TIME Never try to fell trees on windy days, as these are very dangerous conditions.

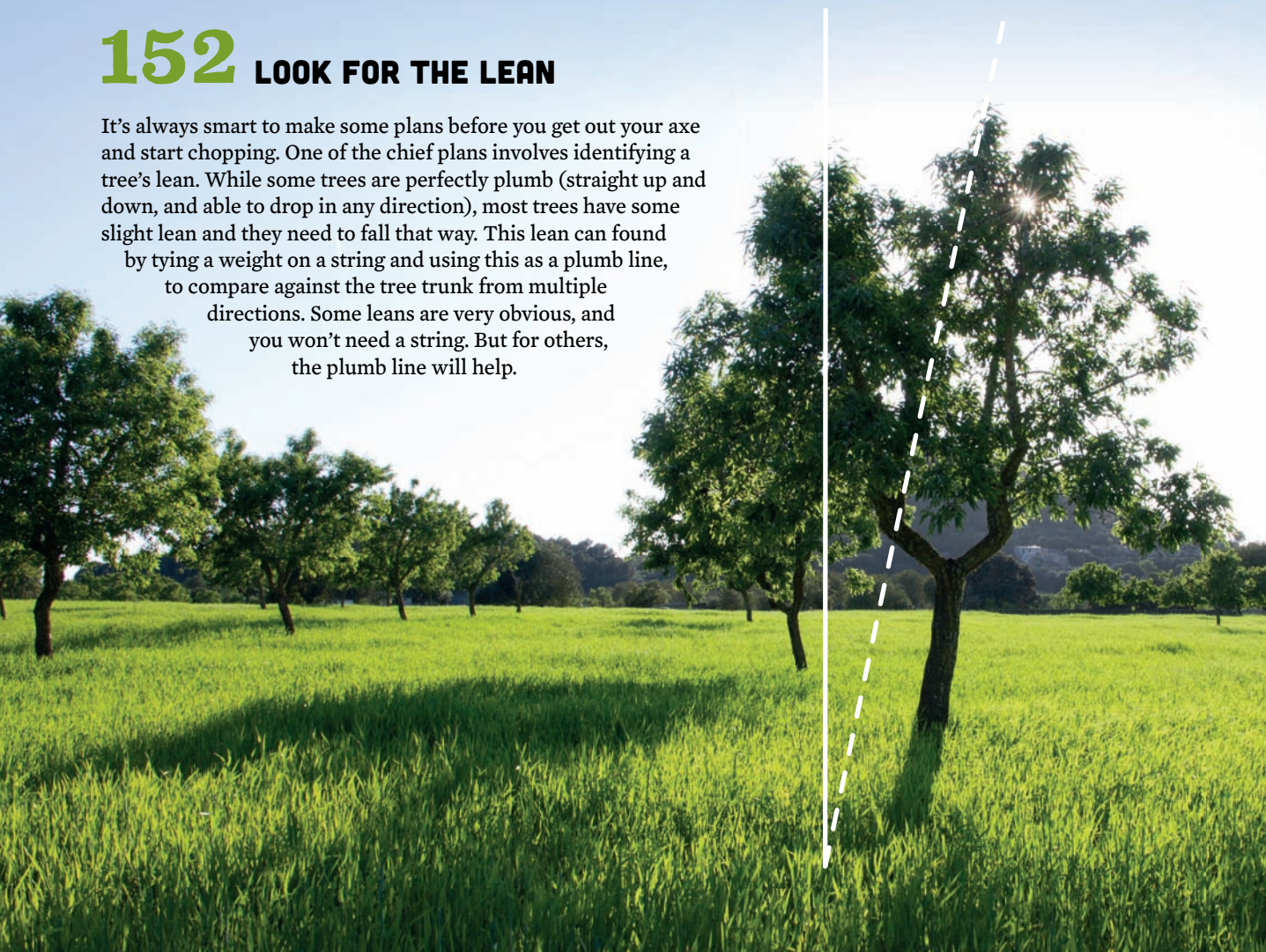
SUIT UP Wear protective gear and work with a partner nearby, but out of the tree's range.

CLEAR THE PATH Clear your work area around the trunk and escape routes before you start. Ensure that you're the only living thing in the area before cutting.

TAKE A POSITION Always work with the direction of lean (or the weight, such as with a tree with more branches on one side than the other).

152 LOOK FOR THE LEAN

It's always smart to make some plans before you get out your axe and start chopping. One of the chief plans involves identifying a tree's lean. While some trees are perfectly plumb (straight up and down, and able to drop in any direction), most trees have some slight lean and they need to fall that way. This lean can found by tying a weight on a string and using this as a plumb line, to compare against the tree trunk from multiple directions. Some leans are very obvious, and you won't need a string. But for others, the plumb line will help.



153 CUT WITH CARE

Once you have determined the direction of lean, you can then make your cuts accordingly to make sure the tree falls the way that you want it to.

CUT AWAY Start by making the face cut on the side of the lean, about a third of the way through the tree trunk. Next comes the back cut, which should be slightly higher up the trunk and parallel to the face cut. Leave an equal strip of the trunk to act as a hinge for the falling tree.

DRIVE A WEDGE IN Once you finish making the face and back cuts, you might still need to finish the job. Keep a few plastic felling wedges (or wooden wedges) handy, and drive them into the back cut to coax a stubborn tree to fall.

154 PLAN YOUR ESCAPE

Have you successfully completed the above steps? If so, you're almost ready to shout "Timber," and drop that tree—all you need now is to be sure you have a clear path (away from the falling tree). We've already told you how important it is to clear your work area, but now's the time to be sure you've removed all of the brush, vines, and saplings around the base of the tree so that you have a clear space to work. Next, choose two escape paths away from the tree. Your primary path should be away from the anticipated direction of fall, and off-line about 45 degrees from the direction opposite to the intended fall (in case the tree falls backward). Scope out alternate paths as well in case you need them. After all, getting crushed by a tree can just ruin your whole day.

155 MAKE A LEAF HUT

The leaf hut is a wilderness shelter that needs no sleeping bag or fire for warmth. This overgrown "people-nest" can protect you from the cold, wind, rain, and snow. It can be made from wet or dry materials, and when properly built it can hold in most of your body heat. Dead air space is the key to its success. As your body heats the air around it, the shelter keeps the warm air from escaping. The dome of debris sheds water and wind, while a frame of sticks and brush keeps everything in its place.

BEAM Select a long, sturdy pole for your beam. It should be at least as big around as your arm, 9 to 12 feet (3 to 4 m) long, and strong enough to hold the shelter's weight.

BEAM SUPPORT This can be a sturdy fork in a tree, a rock, a stump, or a pair of movable forked sticks. Whatever supports your beam should be about 3 feet (1 m) tall, and tested for strength to avoid shelter collapse.

RIBS Use dead tree branches, thick rigid bark slabs, freshly cut tree boughs, or whatever you happen to have lying about. Place the ribs at an angle along both sides of the shelter beam, and keep the ribs close together so leaves don't fall through.

LEAVES Add insulation—leaves or anything that traps air (grass, ferns, moss, pine needles, brush, or tree boughs). Green materials can be used, but dead means more insulation. Three feet (1 m) of leaves protect from wind, rain, and snow, but you can still freeze without proper bedding.

BEDDING Pack insulation in the shelter twice as much underneath as is covering you, with more in the corners to prevent cold spots. A pile of leaves can be placed outside to be pulled in as a door plug.

BARK AND BRUSH Bark slabs can be used as shingles for more wind and water resistance (remember, huts are not waterproof). Add a final layer of brush over the dome to keep wind from stripping your leaves away.

156 LEARN THE LEAN-TO

The lean-to is a classic backwoods shelter, and with its odd name, it's often attributed to Native American architects. But this isn't the case. The lean-to (in name and building style) comes from the late middle English of Britannia, and it simply means a flat roof that leans up against some other structure or support. The lean-to is not quite as efficient a shelter as one might hope, since it offers little insulation and merely deflects some of the wind. Yet it can be comfortable if it reflects the heat of the nearby fire. Just remember that when the fire goes out, the warmth goes too. I prefer to use this type of shelter as storage, wind block, workshop, or fire reflector, and use the leaf hut for my sleeping quarters. But to each, his own. Here are the components.

BEAM Select a long, sturdy pole for the main beam. It should be at least as big around as your arm and strong enough not to break under the shelter's weight. The pole can be any length.

BEAM SUPPORTS The beam supports are a pair of sturdy poles 6 feet (2 m) tall with a very sturdy fork at the end of each. These hold the beam up and pin it against two trees, or another stable structure. Find a place where the supports and beam can lean against trees or other structures with the open side facing away from, or at least parallel to, the wind. The beam supports and structures should be tested for strength, using your full body weight. Never try to build a freestanding lean-to against posts or tripods. The one-sided construction makes them dangerous, and very much like a large dead fall.

RIBS These can be dead branches or freshly cut poles, placed against the beam on an angle to shed the rain. Set them up at a 45-degree angle if you expect your roofing to shed water effectively. Set your ribs at a steeper angle (around 60 degrees) if the roofing materials will be leaky (loose, light, or porous). Place these ribs close together so that the leaves or other vegetation won't fall through.

LEAVES Heap leaves or other debris over the frame to block wind and shed the rain. The angle of the lean-to roof naturally sheds water; add bark slabs for even better water resistance. Like the leaf hut, a layer of sticks, twigs, branches, or poles should be placed on the outside to keep the wind from stripping the leaves. Put a heap of leaves under the lean-to, or build a Sasquatch bed.

157 MAKE A DIY TARP TENT

With a tarp, a few stakes, some rope, and your choice of trees for support, you can quickly build an A-frame tarp tent. Tie a rope between two trees, estimating the height of your shelter. Orient the rope so that the open ends of the shelter line up with the wind for a breezy shelter, or set the walls against the wind if conditions are cold or stormy. Flop your tarp over the rope line, and use short ropes to attach the edges of the tarp to stakes that you've driven into the ground. Make sure all knots are tight, and your shelter is done.

159 BUILD A DIAMOND IN THE ROUGH

This tarp shelter has an aerodynamic wedge that cuts through biting wind and driving rain. With its sleek shape and minimum of three attachment points to the ground, the diamond is more secure than most tarp shelters. For even more protection, add another tarp as a door. Stake down one corner of the tarp on the side that the wind is coming from and tie the opposing corner to a tree, post, or some other structure (this orients your "door" out of the wind). Pull these tight, and secure the remaining two corners down toward the ground. Add additional tie downs where you can.

158 WATERPROOF SOME CANVAS

Long before there were cheap plastic tarps at every camping store, our progenitors made their own waterproof tarps from the natural materials within reach. This was commonly called "oilcloth" and you can make it, too!

YOU'LL NEED

- A PIECE OF COTTON CANVAS, LARGE ENOUGH FOR YOUR NEEDS
- 1 GALLON (4 L) OF BOILED LINSEED OIL (OR MORE FOR BIG TARPS)
- 1 PINT (0.5 L) OF DRY IRON OXIDE PIGMENT POWDER OR VERY FINELY POWDERED CHARCOAL
- A PAINT BUCKET AND BRUSH

PREPARATION Start by washing your canvas and drying with heat. This will remove dirt and any other undesirables (like fabric sizing product), and it will tighten up the fabric. If you have an indoor space to work in (like an empty garage), you can spread the dried canvas on the floor; otherwise, nail it up on a flat wall or fence.

PAINTING Mix your linseed oil and your pigment of choice in the paint bucket. Always use boiled linseed oil, as the raw version will never really dry out. Iron oxide pigment (basically rust) has long been used to make a brick-red color called Spanish brown. Or you can use powdered charcoal, which will give you a dark gray color, sometimes called Yankee gray. Paint the exposed side of the canvas with the paintbrush, working the "paint" into the fabric. Allow it to dry for several days, flip it, and paint the other side. Allow the tarp to completely dry (several weeks), and you'll have genuine oilcloth to use for backwoods shelter roofing, a ground cloth, firewood cover, and pretty much anything else you can imagine.

160 BUILD A STONE HUT

Moving and lifting stones is backbreaking work, no question about it. That said, a stone hut could last for a very long time and support an indoor fire with greater safety than most other shelters. Here's how I glibly explain this insanely laborious build.

STEP 1 Find a level hut site, with plenty of flat, square, or otherwise blocky stones nearby—very nearby. You can use round stones or cobbles, but they'll yield walls that are far less stable (or just plain dangerous).

STEP 2 Lay out your perimeter and the door location. Plan the height as well. Don't aim for a stone mansion. Plan for something that will fit one bed, as this is achievable, whereas the mansion—not so much.

STEP 3 Start stacking stones. Use mud and grass mixed together as mortar, if needed. Try to find the space where each stone fits best.

STEP 4 Add roof beams, roofing material, and a door, and fill any gaps with mud mortar.

TOP TIP

Don't build any walls taller than yourself, or with any stones that seem to shift. Otherwise, your stone hut could become a crypt.

161 DIG A HOT ROCK HEATING PIT

You can't have a fire in a cave (or many other types of shelters), so it's good to know other ways to heat your living and sleeping area. By digging a small pit in the dirt floor of a shelter, finding a good-sized rock that will fit into the hole, and a flat rock to cover the pit, you have the makings for an in-ground heater. Get your two rocks from a dry location (water-logged rocks explode when heated), dig your pit, and make sure everything fits together well. Heat your stone in a fire, carry it to the pit (a shovel works well), and drop it in. Seal the pit with your flat stone lid, and bask in the radiant heat for several hours to come.

162 GET THE WET STUFF

Your prospective water source is a big deal when you are looking for a place to call home, one of the biggest in fact. After all, a person can go weeks without food (not fun weeks, but you can go a surprisingly long time on very, very short rations). But without water? You won't last half a week. So, consider your options carefully. In a best-case scenario, you'll have a few to choose from—or perhaps combine more than one of the following.

USE MUNICIPAL PLUMBING Wait—what happened to going off the grid? That might be the ultimate goal, but the cheap and quick solution is to get connected to municipal water and sewage. If the property has this option, it can be a good way to get started. Then later, you can cut yourself loose.

GET IT DELIVERED Another option for folks without springs and wells is to get your water delivered. A truck full of water comes to your homestead, dumps water into a large holding tank, and you use it as you see fit.

DRILL YOUR OWN WELL With a small investment in the right equipment, you can actually drill your own water well to get supplied from the local water table. These wells can be productive and clear or they may be muddy and go dry if overused. For a lot more money, like thousands and thousands of dollars, you can have a professional company drill you a proper well.

163 DON'T LOWBALL

One big mistake that people often make with a water supply is underestimating their real water usage and building a plan around an amount per day that is way too low. On paper, a conservative number looks good and we feel good about it. People going off the grid for an environmentally friendly lifestyle might try to wiggle that number even lower than they know it should be. But then, when you try living off a system that won't provide enough water, you're in for a shock! Your arbitrary number is not nearly enough. Before you say goodbye to your municipal water bill, take your time to figure the actual number of gallons (or liters) you use per day, ideally across seasons. This honest average will give you the numbers you need to make the right choice when it comes to managing your water and finding the right source.

USE THE LOCAL WATERSHED Spending your days going back and forth from the river with a bucket isn't the only option here. You may be able to create a gravity-fed water system.

GRAB SOME RAIN Catching rain water is an old practice that still makes sense. The average roof on a single family home is 1,500 square feet (110 sq m), and one inch (2.5 cm) of rain falling upon one square foot (900 sq cm) of surface area will yield over half a gallon (2 l) of water. This means that even a small shower can yield several hundred gallons (1,000+ l) of water.

TOP TIP

Always keep extra water on hand in case you have difficulties with your system. Factory-sealed bottled water or water-cooler jugs are handy and last indefinitely.

164 SAVE EVERY DROP

How much water does a home need? According to the USGS, the average American citizen uses 80 to 100 gallons (300–380 l) of water a day. This may seem impossible, but if you take a shower, wash clothes, and flush the toilet a bunch of times, it all adds up quickly. The worst culprit in water usage is the toilet (26 percent of average household water consumption), followed by laundry (21 percent), and showering (17 percent). If your home has a composting toilet system, outhouse, or other water-free septic system, the biggest water hog is gone! Hand wash clothes and our water needs drop again. Cut your showers a little shorter, don't let the faucet run freely, and you could drop your daily water use to something like 20 to 30 gallons (75–115 l) per person per day—a water-thrifty footprint indeed!

165 FILTER & DISINFECT

All living things on Earth require water in order to survive. That includes us, but there are no shortage of microbes in the water too. Waterborne pathogens have been (and will continue to be) a huge threat to the safety and health of anyone who is providing their own water supply, especially from surface water sources. Dysentery and other similar water related ailments have been killing kings and commoners alike for millennia, and it's still happening right now. The World Health Organization has estimated that waterborne pathogens kill as many as 3.4 million people a year worldwide. Whether you get your water off of your roof, from a spring, or out of a tank, you should be sure that you're using the necessary equipment to filter your supply so that you and your family don't fall victim to this global epidemic.

	CARBON (USE FILTERS IMPREGNATED WITH KDF)	SAND
USED FOR	INORGANIC CONTAMINANTS (aluminum, arsenic, cadmium, calcium, chlorine, chromium, iron, lead, mercury, nickel) ORGANIC MATERIAL (e.g. algae) MICROORGANISMS (e.g. bacteria, fungi) PESTICIDES; OTHER ORGANIC POLLUTANTS	ORGANIC MATERIAL MICROORGANISMS SOME HEAVY METALS SOME PESTICIDES
LESS EFFECTIVE FOR	VIRUSES SOME HEAVY METALS FLUORIDES, NITRATES, AND SODIUM RADIATION	VIRUSES HEAVY METALS RADIATION
NOTES	KDF is a chemical compound that greatly increases the effectiveness of carbon filters in removing heavy metals and other toxins. Replace the filter before the recommended date for best safety.	These are vessels of sand that catch and hold particulates. They are an excellent first step in your system, especially if you occasionally have sediment in your water that would hopelessly clog a finer filter.

CERAMIC	REVERSE OSMOSIS	
ORGANIC MATERIAL MICROORGANISMS	ALMOST EVERYTHING (this very effective type of filter is marketed as being able to remove biological agents, pesticides, asbestos, arsenic, some radioactive particles, and more)	USED FOR
VIRUSES HEAVY METALS RADIATION PESTICIDES; OTHER ORGANIC POLLUTANTS	SOME DISSOLVED GASES (including a number of potentially carcinogenic radioactive pollutants)	LESS EFFECTIVE FOR
I'd trust my life to these. The best ceramic filters have silver embedded in them. The ceramic screens out the larger pathogens, and the silver kills the little ones (such as viruses).	Nothing larger than a water molecule can fit through, but this filter type can clog the fastest (a carbon pre-filter may help), and may also require "normal range" water pressure, something you might not have on a gravity-fed system.	NOTES

166 DOUBLE UP ON FILTERS

If you're getting water from rainwater tanks, a well, or a local creek or river, consider a whole-house filtration system.

Flushing your toilet with contaminated water might be okay—unless your dog uses it as a fountain, and gets sick from giardia or other pathogens. As for the shower, rinsing off with microscopic particles of algae, pesticides, and arsenic is anything but refreshing. Doing your laundry with high mineral content water gets less clean, looks dingy, and wears out sooner.

Getting pure water means a very fine filter not designed for high-volume flow. A high-flow filter can be installed on the main water pipes into your home. This will do fine for the laundry, bathroom, and the like. Water used for drinking and cooking can pass through a second filtration system designed to catch anything that the first system missed.

TOP TIP

If you have electricity at your homestead, either self-generated or purchased through a utility provider, you can virtually guarantee the safety of your drinking water by using an ultraviolet light disinfection unit. These small devices are installed in your water line and emit ultraviolet light at the proper wavelength and intensity to destroy bacteria, protozoa, mold spores, viruses, and other pathogens that you may encounter in untreated water. Should your home lose power, there are even small battery powered models available.

167 SET UP SANITATION

You never really think about how crucial bathroom facilities are until you're forced to make do with something inconvenient, stinky, or unsanitary. Luckily, there are a number of options for the off-the-grid facilities.

OUTHOUSES Old-school outhouses are still "in service" in areas where a traditional septic system or municipal sewage hookup isn't an option. The outhouse contains human waste and allows it to break down naturally. It's not a perfect system, as bacteria can leach into the ground water or contaminate a wide area during a flood. But it can be a quick off-the-grid solution, or for emergency sanitation. Dig a deep yet narrow hole, downwind and downhill from your cabin, camp, or home. Make sure you are at least 50 yards (45 m) away from shallow wells, waterways, and other water sources. In areas with a high water table, such as bogs or wetland areas, strive to keep the hole shallow. The hole's bottom must be at least 6 feet (1.8 m) above the water table. Once your hole is done, build a seat or an entire outhouse building. The most basic build is a wooden box with an open top and open bottom, with a toilet seat attached. This is placed over the hole in a secure manner (with tarps around it for privacy), and you're done. You can also construct a little building to cover the hole, as long as you have the skills and materials to do so. Whichever way you go, just sprinkle a bit of dirt, wood ash, or lime down into the hole when it gets too stinky. When the hole is looking full, move the whole setup. Bury the old outhouse holes under a mound of dirt, and it all goes back to the soil.

COMPOSTING TOILETS These crafty inventions use no water, but rather a dry process whereby human waste is broken down into dry, non-stinky matter that can be used as compost or disposed of without worrying about contaminating groundwater. Electric and non-electric versions of the composting toilet abound. If you can, spring for the electric version. This has a fan to fight odor, and a heater to break down the waste more quickly. Either way, this system requires no water and it can be legal in areas where an outhouse is not.

168 DON'T JUST GO

Human waste is loaded with organisms that are better contained than tracked all over your homestead, possibly contaminating your waterways. While a few single-use "cat holes" in the topsoil aren't going to be an ecological disaster, a lot of them (or a bunch of unburied waste) can become a real health hazard. If you're still building that off-the-grid paradise, or there's been some emergency, you should at the very least create a sanitary latrine rather than making like a bear in the woods.

169 DIG A LATRINE

Here's how to create the most basic form of outhouse, when you have no other sanitary options. First, dig a trench into the topsoil, one foot (30 cm) wide, one foot (30 cm) deep, and several feet (1+ m) long. It should always be downwind and downhill from home or camp. Leave the dirt piled nearby for waste coverage. When nature calls, straddle the trench (with careful footing), make a deposit, clean up, and bury the evidence with a sprinkling from the loose soil pile. This keeps down the fly population and helps to cover the odor as well. Keep your latrine area private by stringing up tarps, or select an area that offers natural cover, such as boulders or brush. I like to keep toilet paper in a coffee can, a little trowel, and some hand sanitizer at my latrines.

170 SET UP A SHOWER

For those wanting modern comfort, there are options in plumbing for a self-reliant home. A small shower is often the best answer. Those wanting tub baths need more room (and more water). These can all be options for you, if you plan ahead when designing your home. Be sure it's a plan you can live with—remodels are messy and expensive.

TANKLESS WATER HEATERS
On-demand water heaters don't waste energy heating water when no one is using it, doing so only as needed. Electric units and gas units may heat up to 5 gallons (19 l) per minute, and take up very little space.

SOLAR VERSUS WOOD FIRED
Solar water heating systems can be very economical for heating water, if you live in a sunny area. You'll still get some heat on cloudy days, but it can't compare to full sunshine.

A wood-heated water supply is another option, and it works day or night. You need a supply of firewood to produce heat, but if this resource is plentiful in your area, it's certainly an option.

171 LOAD UP THE LAUNDRY

Clean clothes may seem low on the list of issues if you're living in off-the-grid emergency situations. Shelter, security, water, and other topics take priority. But there are reasons for this task. The oils and dirt that build up in clothing tend to destroy fibers quickly (not to mention smelling bad). Dirty clothes can harbor fungi and bacteria, causing skin rashes, infections, or other maladies.

OPTIONS FOR SCRUBBING The old-fashioned washboard and tub have been employed since the 19th century, and they still do a fine job of laundering clothes to this very day. The method uses little water and no electricity, making it ideal for the off-the-grid lifestyle. The method is also gentle on clothing, increasing its longevity. A wringer often accompanies this setup: rollers that squeeze the water from clothing to speed drying. Modern manual washing equipment includes the pressure hand-washer. A small drum holds dirty clothes and a small amount of hot water with a touch of soap. The hot water naturally pressurizes the vessel, which you hand crank to agitate the load. This takes no electricity, just elbow grease.

BYE-BYE GRAYWATER When you're done, dump soapy water and rinse water (or other graywater) into the top soil, 200 yards (180 m) or farther from any water source. If you only use a little soap, you can dump graywater around plants.

172 BATHE WITH THE BARE MINIMUM

For some of us, a soapy rag on a stick and a bucket of warm water are all the things that we need to stay clean. For most, though, that's not going to cut it, so you'll probably want to spend some effort (and money) designing your hygiene setup.

SHOWER BAG One step up from that rag on a stick is a solar shower bag suspended from a tree branch. You can give yourself a rinse off, but it's not very much like a real shower. And it's definitely no fun at all in the winter.

LOW-FLOW Many off-the-grid homes get by with a solar water heater running into a low-flow shower and draining into a graywater leach bed. This is much closer to a regular shower, while still using very little water or energy.

173 MAKE SOAP

Virtually any soap will pass for laundry soap at a pinch. You can dump dish soap into the wash water, or rub bar soap directly on wet clothing. You can even shave off small pieces of soap and allow them to dissolve in the water before laundering clothes. You already know that your normal laundry detergents are great performers, but you could also make your own effective and natural laundry soap (and you'll actually know what goes into it). An added bonus: this mix is a fraction of the price of your normal detergent.

STEP 1 Assemble your supplies. You'll need bar soap (any will do), borax (a naturally occurring mineral), and washing soda (very similar to baking soda). Use a cheese grater to grate the bar soap into fine shavings.

STEP 2 In a big bowl, blend together 1 part of your grated soap, 2 parts of washing soda, and 2 parts borax.

STEP 3 Store your powder blend in an airtight container such as a large-mouth jar.

STEP 4 Measure out approximately 1 to 2 ounces (25—50 g) per load of laundry. If soap is lacking, use hot water and scrub the clothes anyway. This will remove some dirt and oil, which is better than removing none.

174 GET SOME HEAT

In the days of old, a warm stone hearth was the center of every home. Even in hot climates, chilly nights would bring the family together beside its glow. Our need for heat hasn't changed, but modern methods for staying warm are amazingly diverse.

Your off-the-grid home will need a heating system that suits your local resources and your overall plan for the home site—and a backup system as well. Unless you have an entire farm of solar panels, and more batteries than a big-box store, electric heat won't be a reasonable option. This means that wood, gas, heating oil, or the sun itself will be heating your home. Passive and active solar heating systems work great, if well designed and used in the appropriate location. Natural gas or LP gas could be a good fit for those in treeless terrain with intermittent sun. Heating oil could work (and double as off-road diesel fuel in a pinch). Even wood pellet stoves could find their way into an off-the-grid home.

For most folks, the self-reliant fuel of choice would be the incredibly warm glow of burning wood. Woodstoves can work day or night, without electricity, and in spite of bad weather. If your homestead site is wooded or partially wooded, you could even create your own timber management plan and burn only the wood you harvest onsite.

175 LOOK FOR LEAKS

However you decide to heat your self-reliant home, the best system money can buy won't do much good if all of that precious heat leaks out through cheap windows, gaping cracks around doors, and paper-thin walls. Insulation and draft reduction are major players in the efficiency (and comfort) of your off-grid residence. Do it right and invest in well-constructed windows, a layer of thick insulation in your walls, and some tight seals throughout the home to avoid wasting all your hard-earned heat. Stop your warmth from escaping by maintaining the weather strips on the sides of every exterior door. You can also press rope caulking into any window joints that are leaking. If your home has a fireplace of its own, make sure your chimney flue damper seals up tightly.

176 BUILD A WOODPILE

In the spirit of independence, you may decide to cut your own firewood, but if that's not an option, you can always buy it. Depending on the firewood suppliers, predicted winter weather, and other factors, the price can vary wildly. Wood is commonly sold in units called "cords," a stack typically 4 feet wide, 4 feet tall, and 8 feet long (1.2–1.2–2.4 m). A true legal cord is a stack of 128 cubic feet (3.6 cubic m) of wood, or a loose pile totaling 180 cubic feet (5 cubic m). The price of a cord can vary widely, from about a hundred bucks to three times that, depending on the season and availability.

KEEP IT DRY Freshly cut wood may be up to 50 percent moisture by weight, compared to dry seasoned firewood at 15–20 percent moisture. Whether you are storing fresh-cut or seasoned wood, it should never be stacked on bare ground—the wood wicks up moisture, and rot sets in quickly. Wood can be stacked on rails, wooden pallets, or other supports to allow air flow. If you don't have a woodshed (an open building for wood drying), cover the stack with a tarp, leaving the sides open. This keeps the rain off your wood, while allowing air rising up from underneath to dry it.

CHECK FOR DRYNESS Say you've cut your own wood, split it, and stacked it, but you're not sure it's ready to burn. How can you tell? Cut wood typically develops cracks (called checks) in the cut end when it is dry. It will also have changed color since being cut, turning more yellowish if dried in the shade or greyish if dried in the sun.

177 CHOOSE YOUR WOOD

All tree wood is similar, but density makes all the difference. Hardwood releases more heat per unit than softwood, and creates a longer burning coal bed in your wood stove. The most common hardwood species in the Northern Hemisphere are oak, hickory, elm, maple, and beech. Softwoods such as pine, tamarack, basswood, hemlock, birch, and poplar weigh less per unit and store less energy. Softer wood species burn quickly and their coal bed doesn't have the same longevity as hardwood. This doesn't mean that you can't use softwood. In fact, it's the only choice you'll have in some areas. In the coldest parts of North America, it's pine, spruce, birch, aspen, or nothing. Folks there stay warm burning softwood during the longer colder winter. But they have to cut a lot more wood, and feed the fire more often, than those in the south.

178 PUT IT OUT RIGHT

One of the most important items for those with a fireplace is a way to put out a chimney fire. Soot, creosote, and other flammables can ignite when the stove runs hot, starting a fire in the pipe or flue liner. If this gets hot enough, heat transfers through the wall or ceiling, lighting adjacent materials and starting a house fire. The solution? A Chimfex extinguisher. This looks like a common red road flare; you strike the end to light it just like a road flare. Once lit, you toss it into the fire, to one side, not on the flame. Close the stove door or fireplace covers tightly and close the draft. The Chimfex creates a thick volume of non-flammable smoke, replacing the oxygen, and suppressing a fire in about 22 seconds. Keep two on hand for each stove or fireplace, since chimney fires can reignite and larger flues may need more than one Chimfex.

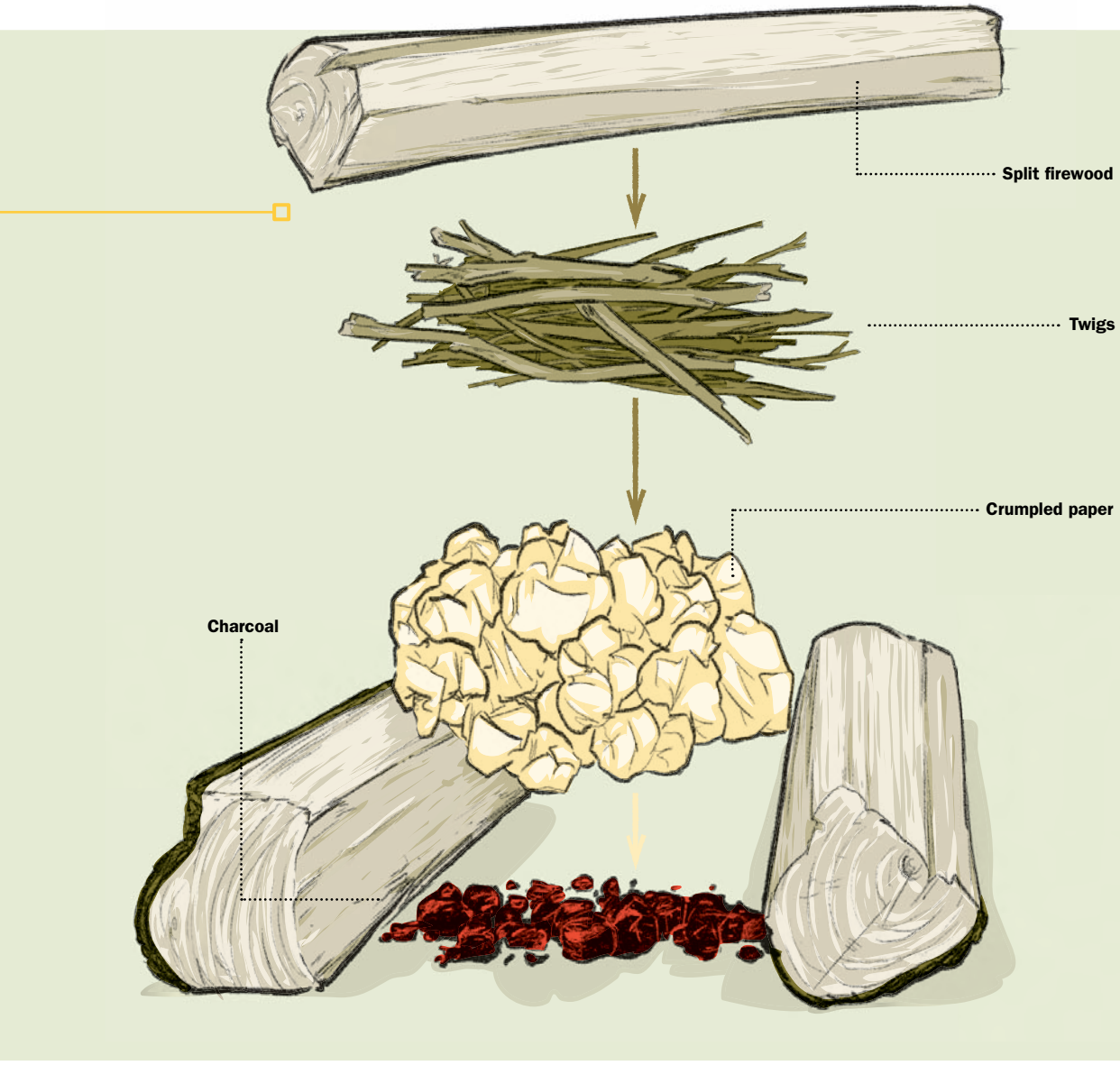
Firewood in a crooked "H" shape.

179 START A FIRE

Lighting your fire in a stove or fireplace is an art, and everyone seems to have their own little tricks. Matches and lighters (especially long-necked ones) are common methods of ignition. But the really important part is your material selection and your "fire lay." My basic setup is quite simple: I sift through the cold ashes of the previous fire, remove the ashes for disposal, and then set the charcoal aside. In the clean fire box, I'll place crumpled balls of scrap paper and the charcoal chunks, between two small pieces of split firewood. I'll lay dry twigs or split kindling pieces on top of the paper and charcoal, and then set another small split firewood piece atop it all, at an angle. From overhead, the three small firewood pieces look like an "H" with a crooked crossbar. Then I light the paper with the chimney flue or stove draft open. The materials light quickly with this open and airy fire lay design, the charcoal catches fire, too—creating the beginning of a coal bed—and the fire takes off.

TOP TIP

Wood stoves can burn almost any wood, but there are a few things that aren't a good idea. Very dense and hot burning woods may be a fire hazard, and painted or pressure-treated woods are not safe to burn in a home.



180 BURN FRESHCUT

For all our talk about dry, seasoned firewood, you'd think it's the only thing that will catch fire. Nope!

Fresh-cut wood will burn, too. You just need an established bed of coals to get green wood to ignite. Wet or green wood needs plenty of heat to evaporate the higher water content before the wood can burn effectively. Many people, myself included, will cut some live wood over the winter, particularly on nicer days. This wood is then blended with dry wood to extend its burn time. You may not want to do this trick every night as wet or green firewood is smoky, and it can create excess creosote, a sooty, tarry substance that collects on chimney walls and is highly flammable.

181 BUILD A WOOD STOVE

With a purchased kit or some crafty home metalwork you can turn an ordinary steel drum into a simple and affordable wood stove to heat your off-the-grid home or outbuildings. Barrel stove kits are inexpensive and they come with the stove legs, a hinged metal door, and a damper collar you'll need to create this simple stove (you supply the barrel and some tools). They are made to work with new or used 30- or 55-gallon (114- or 208-l) barrels with closed heads.

YOU'LL NEED

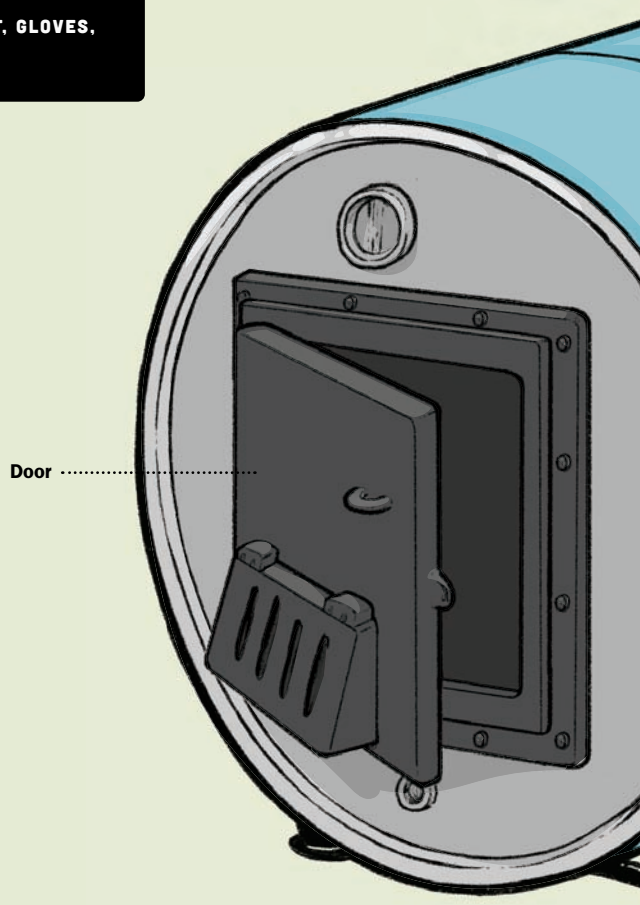
- 30– OR 55–GALLON (114– OR 208–L) STEEL BARREL OR DRUM WITH CLOSED HEAD
- BARREL STOVE KIT, WITH LEGS, HINGED DOOR, AND DAMPER COLLAR WITH FLUE
- STOVE PIPE
- FIRE BRICKS
- CUTTING TORCH, OR DRILL AND RECIPROCATING SAW
- PLIERS
- RATCHET OR SOCKET WRENCH
- SCREWDRIVER
- LONG–SLEEVE SHIRT, GLOVES, GOGGLES

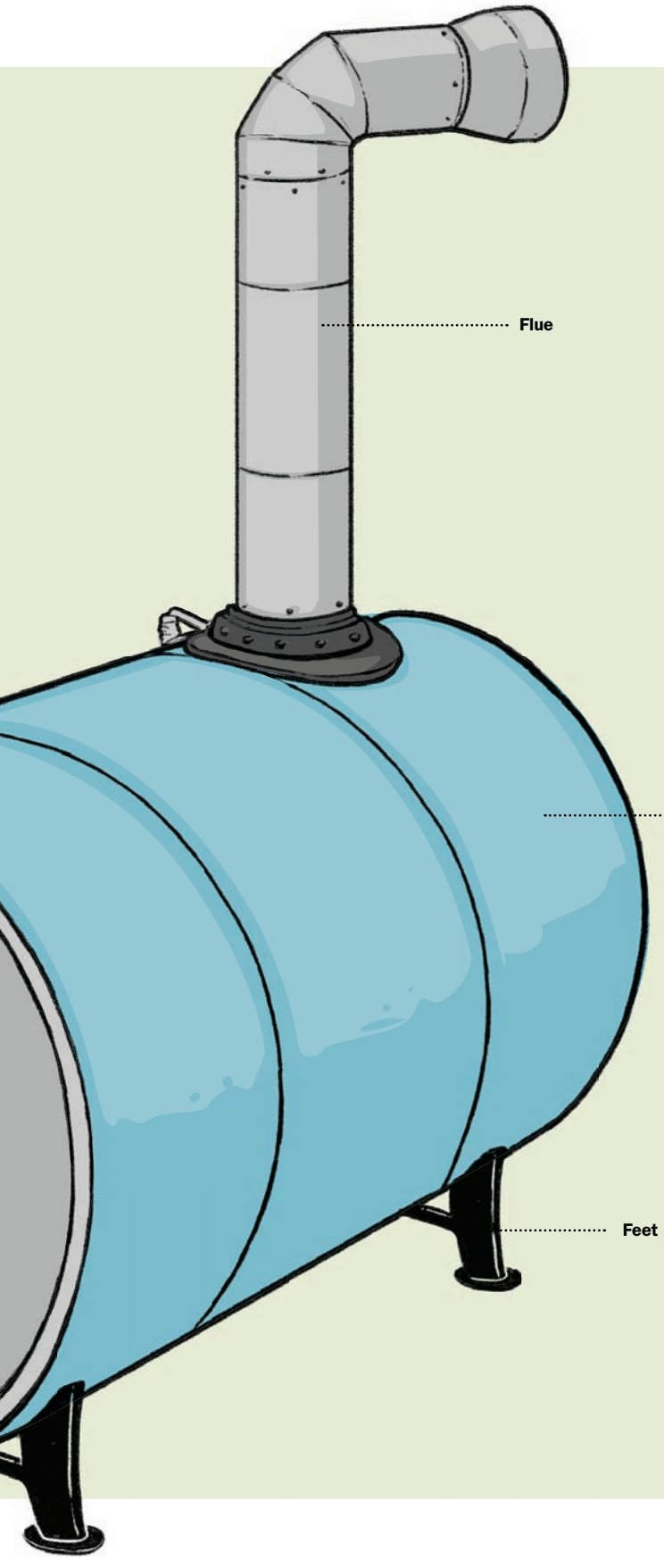
STEP 1 Choose an appropriate spot for your stove. It needs to be on a fireproof surface, like a concrete floor, brick or stone hearth, or a stove mat. Also, keep the stove a proper distance from walls, with a fireproof barrier as needed.

STEP 2 Trace and cut the door and stovepipe openings using the manufacturer's instructions. This can be done with a cutting torch or by drilling a pilot hole to insert a jigsaw blade, and making the cuts with a jigsaw power tool (reciprocating saw).

STEP 3 Drill holes around these openings, per the instructions.

STEP 4 Install the barrel stove legs, door, and damper collar by bolting them in place through the holes.





STEP 5 Attach your stove pipe and run it to your ceiling, exterior wall, or other safe venting point.

STEP 6 Finally, line the bottom of the stove with fire bricks.

STEP 7 Light your first fire and enjoy the warmth. To capture even more heat, opt for the double-decker "two barrel" kit, which allows you to delay the heat going up the stove pipe and get more warmth from every stick of firewood.

TOP TIP

Some places that sell steel barrel stove kits also will sell the barrels themselves, but you can make do with any steel barrel so long as it has a closed head. Empty beer kegs are a good choice. They're built to withstand internal pressure, they have solid walls, and the only thing they contained previously was, well, beer.

182 SET UP SOLAR

If your property gets enough sunlight, solar panels are a pretty obvious choice for your electricity-generating needs. You have a couple of options for how to do this—a standalone system or a grid-tied one—each with its benefits and downsides. You'll need to weigh cost and convenience against your desired level of self reliance. The family that's just looking to save some money on electricity and improve their property values is going to have different considerations than the folks who have decided to bunker up and prepare for the end times.

STANDALONE SYSTEM As the name implies, a standalone system isn't tied to the electrical grid at all. It truly is off the grid in the purest sense of the term. The system is made up of photovoltaic (PV) solar panels, a battery bank to store the energy for nighttime use, the electronics to control the battery charging and electrical delivery, and (depending on your appliances) an inverter to turn the direct current from the batteries into alternating current that runs to your outlets. This is definitely the more expensive option, as battery banks alone can cost several thousand dollars. This is a good system if municipal utilities aren't available at your site or you absolutely don't want to be grid-tied.

183 LIVE ON SOLAR POWER

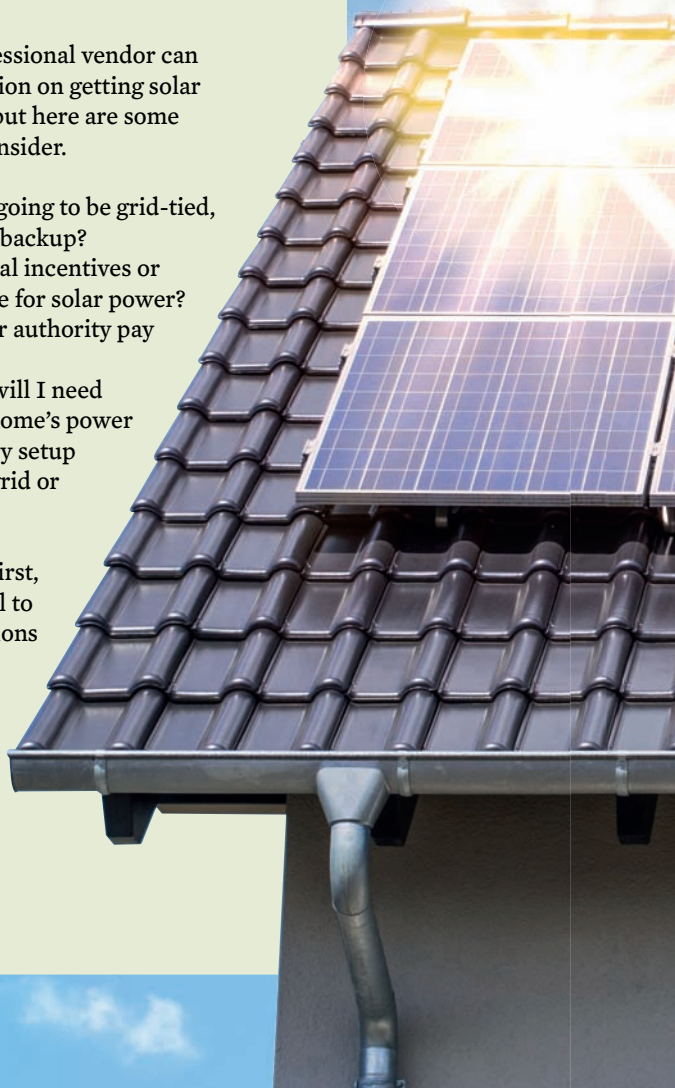
In the event of a temporary or (hopefully not) permanent loss of public utility power, you can provide power on your own at a small scale, or make use of a fuel-powered generator. A solar array on your home can also provide a good measure of backup power.

You can save money on your utilities and sell excess power in some areas if you're grid-tied, but if the power grid goes down, your solar setup will also be compromised. Off-grid power systems can also be supplemented by generators. Some setups can be hybridized: grid-tied solar with a battery backup and inverter, which will automatically switch over if there's an outage.

The biggest cost comes from installation (and the setup lasts for decades), but some areas of the United States and elsewhere often provide incentives for those who choose to get solar power systems. A professional vendor can provide more information on getting solar power for your home, but here are some questions for you to consider.

- Is your solar setup going to be grid-tied, off-grid, or battery-backup?
- What state or federal incentives or rebates are available for solar power?
- Will my local power authority pay me for electricity?
- How many panels will I need to account for my home's power needs? What battery setup will I need for off-grid or battery backup?

Do the basic research first, then find a professional to see what your best options are. As with any big investment, shop around. It's worth doing right.



GRID-TIED SYSTEM This setup still uses solar panels to soak up the sun, but instead of using a battery bank for energy storage the way that a standalone system does, it's connected directly to the local electrical utility. This makes it a cheaper system, since the batteries are a major expense. It also means that you'll never run out of power, no matter how high your demand. This system is a great entry into the world of solar power, and is often adopted by those who wish to have a "greener" home. The only serious problem with the system arises when the power grid goes down. You may not have enough juice to fulfill your needs from the panels alone, and you will have no place to store excess power that your panels have produced.

184 CHOOSE A GENERATOR

If you are unable to have utilities run to your home, and you can't have or don't want solar power, you could look into a generator to produce your electrical power. Here are two types of generators and why they are so different.

PORTABLE You or your construction crew likely used one of these (or several) if you built your own off-the-grid home. These units can supply several thousand watts of electrical power, and only cost a few hundred dollars. They can be moved around, even by one person, and are easy to transport from site to site. Most portable generators run on gasoline. The only major downsides to these affordable units is that they cannot be run full time (they'll burn up) and they are often loud (ruining the peace and quiet of your remote site). Ultra-quiet suitcase-sized units are also available, producing a surprising amount of power for their size, but these can be as much as 10 times the cost of cheaper portable units.

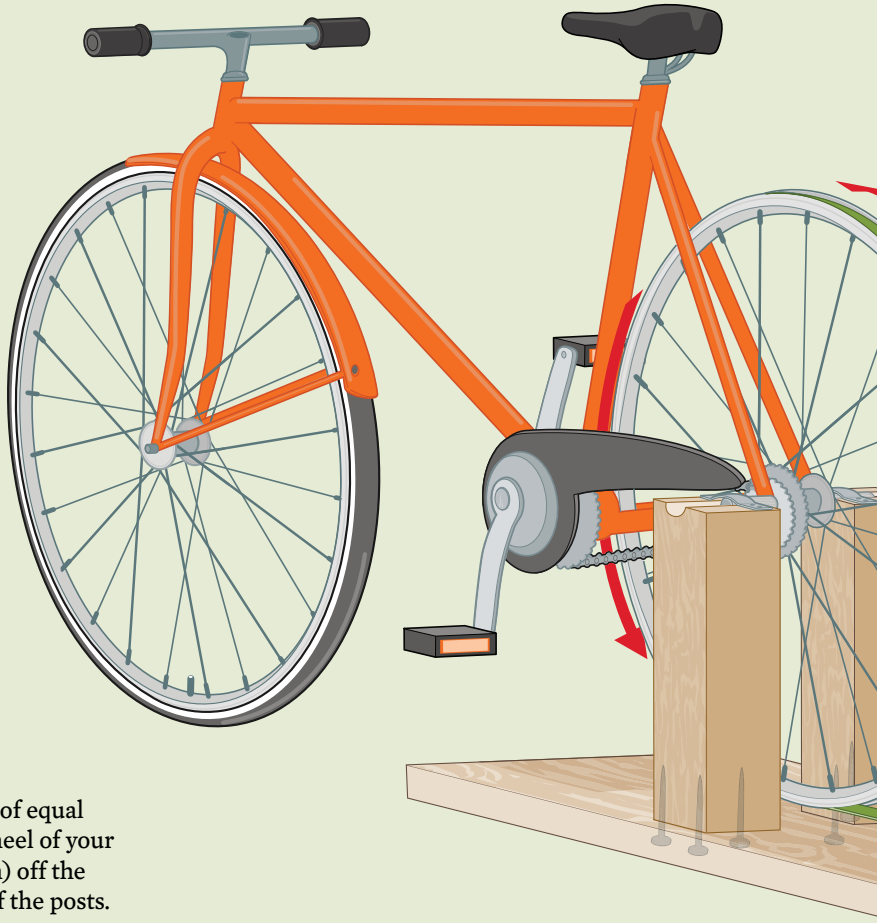
WHOLE HOUSE These units are much larger than portable units, and they are available in models that run on various fuels—including gasoline, diesel, and natural gas. They can run for longer periods than a portable generator, and supply enough power to run the average home (on-grid or off-grid). Consider buying a generator with a 220-volt option if you have a well pump that runs on 220 volts. Generators of this size can also act as a back-up for solar systems and charge dwindling batteries after a week of gloomy skies and thick clouds.

185 USE BICYCLE POWER

When the lights go out and your appliances stop working, you can of course resort to a gas-powered generator. But if you're short on fuel, or don't have solar power as a fallback, you can gather a few spare parts and create a power supply fueled by your muscles instead.

YOU'LL NEED

- 4X4 WOOD POSTS
- AN OLD BICYCLE
- 2X12-INCH- (5X30-CM-) WIDE HEAVY PLANK
- SCREWS
- DRIVE BELT (FROM AN AUTO PARTS STORE)
- METAL BRACKETS
- 12-VOLT MOTOR
- HEAVY-DUTY ELECTRICAL WIRE
- 12-VOLT CAR BATTERY
- DC-TO-AC POWER INVERTER
- DIODE



STEP 1 Measure and cut two 4x4 posts of equal length, tall enough to keep the back wheel of your bicycle at least a couple of inches (5 cm) off the ground when its axle is rested on top of the posts. Cut grooves into the posts for the axles to rest on.

STEP 2 Fasten the posts onto the plank with screws through their undersides, leaving enough space between them to accommodate the bike's frame.

STEP 3 Remove the bicycle's back tire, and replace it with the drive belt. Set the bike's rear axle on top of the posts and secure in place with metal brackets.

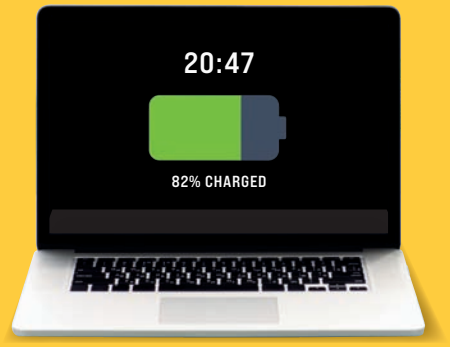
STEP 4 Attach the 12-volt motor to the plank (add brackets if the motor has none), in line with the bicycle's rear wheel, and wrap the drive belt around the motor's axle. Make sure the drive belt has no slack.

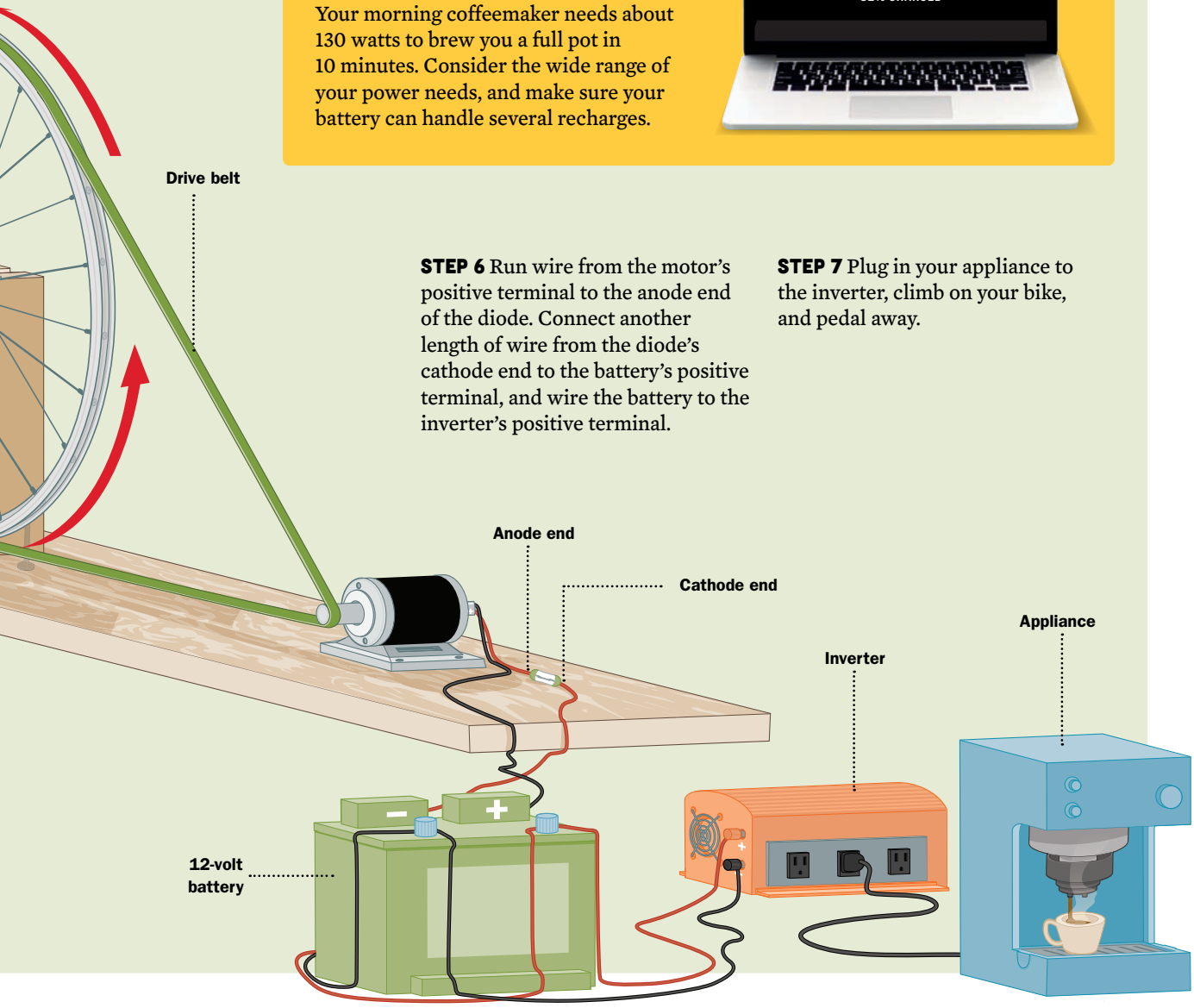
STEP 5 Attach electrical wire between the negative terminal of the motor and the 12-volt battery, then connect the battery to the inverter's negative terminal.

186 CHARGE A BATTERY

At a steady pace, your average bicyclist could pedal out between 120 and 300 watts of power in a 20-minute session on this generator. Your typical 12-volt car battery holds up to 500 watts, so you could fully charge it (and get some serious cardio, too) with a little time on the bike.

Most small household appliances don't draw a lot of power. Your laptop runs on 50 watts, so 20 minutes of cycling will run it for almost an hour. Lightbulbs start at 25 watts, but LEDs and fluorescents have a base of 5 watts—and give 2⅛ hours of light! Your morning coffeemaker needs about 130 watts to brew you a full pot in 10 minutes. Consider the wide range of your power needs, and make sure your battery can handle several recharges.





STEP 6 Run wire from the motor's positive terminal to the anode end of the diode. Connect another length of wire from the diode's cathode end to the battery's positive terminal, and wire the battery to the inverter's positive terminal.

STEP 7 Plug in your appliance to the inverter, climb on your bike, and pedal away.

187 BRING IN THE BOOKS

It's been said that "the human mind needs books like a sword needs a whetstone." I couldn't agree more, though I may be a bit biased as an author. In any case, books are an ideal source of information in a grid-down scenario since they don't require a power source, just enough light to read. On the education side, be sure you've stocked books (like this manual!) that will help you cover all your survival needs, including medicine, fire making, water procurement, foraging, gardening, hunting, food storage, construction, electronics, toolmaking, and handicrafts. Think of all the information you look up online every day, and of all the skills you know (but could use a reference guide to) and don't yet know (and need a primer on). The more knowledge you can have at your fingertips, the better!

For entertainment, consider the stories and ideas that have meant the most to you throughout your life. What books would bring you back from the brink of despair? What stories would you read aloud to fill the hours of a dark, lonely winter night? What would give you a much-needed break from the hard work of survival? What would bolster your faith or inspire you to keep going? These are the books you'll want on hand when things go bad. (And if any of those books include realistic tales of survival that might also give you practical advice, all the better.)

188 GET SOME GAMES

Games are a great way to keep yourself or your group entertained. Depending on your interests, your free time, and what you have on hand, they could be as simple as a five-minute card game or as complicated as an hours-long strategy game or a Dungeons & Dragons campaign that never seems to end. Your home might already be stocked with a games cupboard full of all your favorites. If not, think of a few games you've enjoyed playing and see if you can add them to your stockpile. Small pieces that can be used for many different games, like notepads, decks of cards, or sets of dice, are great—you could even fit those into a bug-out bag. Whatever you store, make sure it's usable even without power or internet access, and try to include something that each person in your group would enjoy. (Also, we don't recommend adversarial games like Diplomacy or Monopoly—those could lead to strife among your group, which is the last thing you want in a disaster scenario.) Don't forget that humans have used games for millennia as teaching tools and to make dull work interesting. If you find yourself faced with monotonous tasks (yet another load of firewood to split, or five more miles to walk to get home), use a bit of creativity (part of your survival mindset) to make a game out of it. Race a friend, add a complication, or look for interesting things along the way. These simple games can work especially well with small children. All they need is a bit of encouragement and some imagination. Then everything can become a game.

189 INCLUDE ELECTRONICS

Electronic entertainment is more vulnerable to disruption than analog books and games, but if your power's still on, or you've got solar panels or a generator to replace it, then go for it! Small devices, like smartphones, mp3 players, or handheld gaming consoles, will be the easiest to keep powered in a grid-down scenario. Store extra batteries or charging cables for them just like for your other equipment. You'll lose access to online games and streaming services if the internet goes down, so make sure the files you need for your favorite games and media are downloaded to your devices or to a backup hard drive. You could even burn a CD of kick ass motivational "doomsday" music, or put together some sweeter songs to give you hope when things seem gloomy. Even if the power is out in your home, you could still listen to your favorite music in a vehicle with a functional CD player. And just like in ordinary life, you shouldn't let entertainment distract you from necessary work. Similarly, you shouldn't let the enchanting blue glow of your screens lure you away from a healthy sleep schedule—you'll need your rest more than ever when disaster strikes.

190 CAMP OUT AT HOME

If you are thinking about cooking your dinner on the porch of your tiny home or during a campout, you will have plenty of different choices of stove that you can use to boil water and cook food when you're living off the grid, short- or long-term. These choices are basically divided by the kind of fuel they use (which may also relate to the efficiency and availability of fuel—depending on your location or situation—as well as their price). Here is a comparison of some of your most common cooking options.

FUEL TYPE	PROS	CONS
SOLID (compressed fuel cubes, woody materials)	**INEXPENSIVE** **READILY AVAILABLE FUEL** Some sophisticated models can provide electricity from heat.	**CANNOT BE "TURNED OFF" LIKE OTHER STOVES** **MAY PRODUCE SOOTY SMOKE**
UNPRESSURIZED LIQUID (kerosene, methanol, alcohol gel)	**INEXPENSIVE** **READILY AVAILABLE FUEL**	**SLOWEST TO BOIL WATER AND COOK FOOD** **MAY PRODUCE SOOTY SMOKE**
PRESSURIZED LIQUID (naphtha ("white gas"), methanol, ethanol, kerosene, automotive or aviation fuels)	**EASY TO OPERATE AND CLEAN**	**MID TO HIGH PRICED TO MATCH EFFECTIVENESS**
PRESSURIZED GAS (butane, propane)	**VERY EFFICIENT** **EASY TO OPERATE AND CLEAN**	**HIGH PRICED** (some butane stoves can be found cheaply) **MAY BE DIFFICULT TO FIND FUEL CANISTERS IN REMOTE AREAS OR AFTER A CRISIS**

TOP TIP

One of the best items to use with a camp stove is a windscreen. Not only does it keep the wind from interfering with the flame of your cookstove, but it keeps the heat underneath the pot, right where you want it to be. You can purchase a windscreen made of high-tech materials, or make one from several layers of aluminum foil.

191 BURN YOUR BOOZE

I have used alcohol-fueled stoves for many years, while camping, backpacking, and at home during power outages. These simple contraptions are basically little metal cans that hold a few ounces of high-proof alcohol (methanol or rubbing alcohol work best, but you can use moonshine in a pinch). When lit, they produce a slow steady heat. One of their best features is the ease of cleanup after a fuel spill—there isn't any cleanup! The fuel quickly evaporates away. You could also use the alcohol in austere conditions for wound disinfection (though it will sting painfully) or to disinfect medical equipment. The downside is that alcohol stoves are very slow to boil water. It may take more than ten minutes just to start a quart (1 liter) of water boiling.

192 IMPROVISE A SOLAR LIGHTBULB

If you have a garage, shelter, shed, or outbuilding that could use some light and you don't have a way to provide electricity, you can channel the sun instead. This idea was originally pioneered in shanty towns that lacked utilities, but it can be put to use anywhere sunny.

YOU'LL NEED

- ROOFING MATERIAL TO MATCH YOUR STRUCTURE (ALUMINUM SIDING, PLASTIC PANEL, ETC.)
- 2-LITER PLASTIC WATER OR SODA BOTTLE
- 1 TABLESPOON (15 ML) BLEACH
- HEAVY-DUTY WEATHERPROOF CAULKING OR SEALANT

STEP 1 Cut a 1-foot (0.3-m) square of your roofing material, then measure and cut a hole in its center to match the widest part of your plastic bottle. You can also cut a slightly smaller hole, then trim its edges to fold down into little flaps to help support the weight of the bottle.

STEP 2 Fill your bottle near to the brim with water and add bleach. Close its cap and cover its edges with sealant.

STEP 3 Slide the bottle through the hole in the roofing material, about halfway, with its top facing up. Add more sealant around both sides of the panel and allow it to dry to anchor the bottle in place.

STEP 4 Find a place on the roof of your structure where the light will be cast most widely inside. Mark and cut a hole large enough for the bottle's widest point.

STEP 5 Apply more sealant around the hole, and slide the bottle through, pressing the panel firmly into place to seal thoroughly. Add more sealant to weatherproof. You now have the equivalent of a 60-watt lightbulb.

193 MAKE YOUR OWN FUEL

Whether serving as a small light source or powering an improvised camping stove, those cans of Sterno are a great resource. With a few household ingredients, you can make your own by creating a substance that binds with alcohol to make a gel.

YOU'LL NEED

- ANTACID TABLETS WITH A MINIMUM OF 1,000 MG CALCIUM CARBONATE EACH
- WHITE VINEGAR
- ALCOHOL OF AT LEAST 95% (EITHER ETHANOL OR GRAIN ALCOHOL, OR ISOPROPYL RUBBING ALCOHOL)

STEP 1 Crush your antacid tablets into fine powder. (You can substitute crushed eggshells, powdered gardener's lime, or calcium supplements.)

STEP 2 Add vinegar to the powder, about 2 teaspoons (10 ml) per tablet, and stir the mixture together until the powder dissolves and the fizzing stops. Allow it to dry overnight and thicken into a slurry; its volume will shrink by half.

STEP 3 Measure out an amount of alcohol about twice the volume of the slurry, and stir in slowly and thoroughly, a bit at a time. The mixture will thicken into a jelly.

STEP 4 Collect into a container and seal it airtight to avoid any alcohol evaporation. When needed, you can open the container and light the material (after placing into a fireproof vessel, if needed).

194 ASSEMBLE AN OIL LAMP

Need a light? You don't necessarily have to fill up a lantern with gas, petroleum, or paraffin oil. In fact, you don't even need a specially built lantern. People have been lighting their way with lamps for millennia, fueled by oils from plants (most notably, olive oil). All you need is a sturdy container, a fuel source, and a wick to draw it up.

STEP 1 Get a jar or bottle to hold your fuel. (You can even use the container that holds your olive oil.) Puncture a hole through the lid to hold your wick, and make one more hole to avoid a vacuum effect when the wick burns later.

STEP 2 Acquire a wick (you can find various sizes in craft stores), or make your own from an absorbent cotton or linen cord. You can also cut a long, thin strip from an article of clothing.

STEP 3 Soak the wick in a mixture of 1 tablespoon (15 g) salt per 8 ounces (230 ml) water, which will help keep the wick from charring. Gently wring out the wick and dry overnight.

STEP 4 Fill your container with whatever oil you're using as fuel. You can use olive oil, paraffin lamp oil, vegetable oil, or even used cooking oil. Pure olive oil or paraffin burns the most cleanly, with the least smoke, while other vegetable oil types will smoke more. Dip the wick into the oil to soak it, and then feed it through the opening on the lid. Screw the lid on firmly.

STEP 5 Pull up between ¼ inch (6 mm) and ½ inch (12 mm) of wick and light it. As the oil burns, more should be drawn up through the wick, assisted by air flow through the second hole, and continue feeding the lamp.

195 CRAFT CANDLES TWO WAYS

An ideal emergency light source, candles can be stored for years at a time, and aside from whatever part is melted while lit, their fuel cannot be spilled. There are plenty of substances that can be used for the body of the candle: the remnants of other candles, beeswax, paraffin, or tallow (a solid, whitish animal fat). You can even use lard, like the kind found in bacon or cooking grease, although it is softer and will need to stay in a container. To make candles, all you really need is the wax, a heat source, a container, and a wick. There are two main methods to making candles.

DIPPING This method starts with a long wick dipped into a container of hot, liquid wax (either in a special heater or a double boiler—such as a pot full of wax in a larger pot filled with hot water). Layers of wax are built up around the wick with each successive dipping, creating a broader, heavier candle as you go.

MOLDING A container is used to hold this sort of candle—a jar, can, or similar container (sometimes disposable, like votive candles in small aluminum cups)—or a mold that can be reused or discarded (such as a paper cup). You can tie the end of the wick around a stick and let it hang down into the mold while it is filled with wax, or drill a hole into the wax after pouring, and thread the wick into it.

196 OWN 8 ESSENTIAL KNIVES

The frontiersmen may have used the same knife to skin game, eat dinner, and shave—but that doesn't mean it was a good idea. Here are eight basic knives that everyone should own, and why.

EVERYDAY CARRY

The classic pocket knife is often a folding knife, but it can just as easily be a fixed-blade knife. This is your go-to blade for most cutting jobs and the most likely tool that you'll be keeping on your person (in your pocket). The newer-model folders can often have assisted-opening features such as spring assist and thumb studs on the blade's spine to allow for one-handed opening. Select a folding knife that opens smoothly, without feeling loose or rattling. Stainless steel or high carbon steel blades can both be fine choices for an everyday carry knife.

BOWIE KNIFE

The Bowie-style knife, popularized by the Western hero Colonel James "Jim" Bowie, is the quintessential blade to use for hunting, fighting, and survival tasks. Modern incarnations abound; buy one that has a full tang (the blade metal extends all the way through the handle). Pick one that has some weight to it for chopping but isn't so heavy that you don't want to carry it. Many different steel types are (and have been) used for Bowies.

FILLET KNIFE

Skinning and butchering turn from a chore into a pleasure with a sharp fillet knife in your hand. You may have special ones for fish, fowl, and red meat—or you can just use one knife for all. Plastic handles are common to help facilitate cleaning the knives when the chores are done. Select a thin blade made from stainless steel for years of trusty service.

CHEF'S KNIFE

Cooking and food processing can get a lot easier if you add a chef's knife to your chuck wagon. This versatile blade slices, dices, and preps food with the greatest of ease. Stainless steel is a great choice. Avoid high-carbon steel for your chef's knife, as this steel is prone to rust with such watery workloads.

TACTICAL KNIFE

This knife is all business, and that business is self-defense. These blades are often used as backup for firearms in military and law enforcement. They should be rugged and large like a Bowie. They should also be razor sharp, with a penetrating blade tip. The tanto style of blade tip is ideal for some serious "punch through" capability.

MULTITOOL

More than just a blade, the multitool got its start as the venerable Swiss Army knife, although the more robust Gerber-type tools are a modern stereotype. Its folding mechanism holds things like pliers, screwdrivers, saws, and at least one knife blade. While not as effective as a set of purpose-built tools, this is still a versatile mini-toolbox that fits right in the palm of your hand.

COMBAT KNIFE

As the name indicates, these blades are made primarily with hand-to-hand fighting in mind, with secondary use as a utility knife. A single-edged, high-carbon steel straight blade with a clip point allows the wielder to both thrust and slash. Other occasional innovations for utility include a serrated spine, or a hollow handle for survival gear storage. The models made famous by the United States Marine Corps are popular for their design and proven, field-tested effectiveness.

RESCUE KNIFE

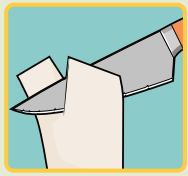
Also known as an EMT knife, this versatile survival tool is commonly carried by various emergency services personnel, from firefighters to police to paramedics. It's a folding knife with an edge that's at least partly serrated, and bears two important accessories: a seat-belt cutter, and window breaker. A belt clip on the handle allows it to be carried within easy reach to use at a moment's notice.

197 GET A GOOD EDGE

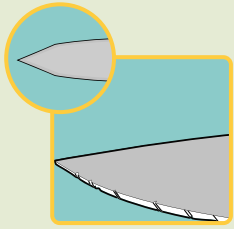
Putting a keen edge on your knife is almost as important as carrying the knife in the first place. A dull knife won't cut very much and is more likely to cause injury to its owner. Good equipment is an important part of the task, but with the right technique you can literally sharpen a knife on a rock.

198 WET YOUR WHETSTONE

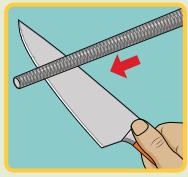
Don't let the similar words confuse you. The word "whet" means "to sharpen," not "to moisten." And while you may actually commonly apply water or oil to a whetstone when sharpening your blades, you can also use your stones dry. Just brush or blow off the dust periodically, to keep the pores of the stone open, and they will continue to cut steel for you.



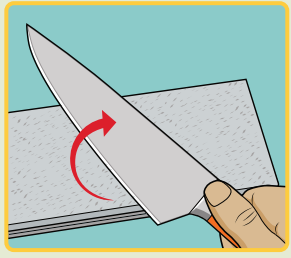
STEP 1 Survey the damage to see just how dull your knife really is. Look for nicks in the edge, and try cutting a piece of paper to test the edge. Deep nicks and no paper cutting mean you're going to have a lot of sharpening ahead of you.



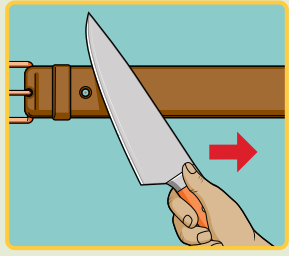
STEP 2 Determine the edge angle of your knife. Depending on the make and model, the actual edge may have a different angle than the sides of the knife blade.



STEP 3 File away any nicks with a bastard file or a coarse sharpening stone, while maintaining the proper edge angle (most knives have a bevel angle of roughly 20 to 23 degrees). If there are no nicks, go down each side of the edge twice with a coarse stone.



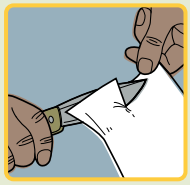
STEP 4 Sharpen with a medium-grit sharpening stone, twice on each side, and finish by doing the same with a fine stone. Grind the edge using little circles and count as you go, making the same number of strokes on each side of the blade.



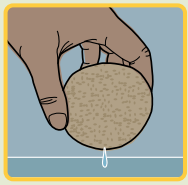
STEP 5 Finally, to remove burrs and polish the edge, strop the blade against a leather belt or a smooth log. Draw the spine of the knife forward, dragging the sharp edge against the stropping surface. Strop each side several times, then test for sharpness.

199 SHARPEN WITH A ROCK

Don't have a sharpening kit? Don't worry. You can literally sharpen your knife on a handy rock, which could be a vital skill in the wild. Here's how you can make a shaving-sharp edge.



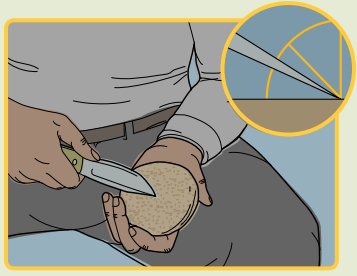
STEP 2 Check how dull your knife really is. Look for nicks in the edge, and try cutting a piece of paper or rope to test it.



STEP 1 Look for a fine-grained round stone in local waterways. Select one that has a smooth section and is similar in texture to your normal sharpening stones.

TOP TIP

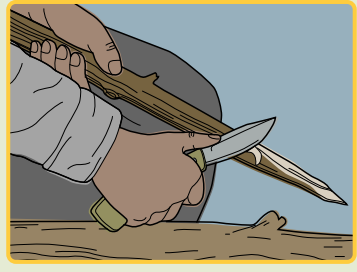
Lost your cutting tool? You still have a fighting chance if you can make a temporary replacement. Find a leg bone from a medium sized animal, say a wolf or small deer. Tap the bone slightly with a rock until it begins to show many hairline fractures. Twist the bone hard and you'll get a unique break—the spiral fracture! Find the resulting sharp edges, and use the bone piece as a knife. It's not as sharp or durable as steel, but it will serve until you can make a better blade.



STEP 3 Apply some water to the stone and sharpen you knife with little circular strokes, equal numbers for each side of the blade. Hold the knife at a 45 degree angle, then lower it by half. In a perfect world, this would be 22.5 degrees, but close enough is good enough. For a 4-inch (10-cm) blade, do about 30 little circles on each side, maintaining the described edge angle as best as you can.

STEP 4 Rinse your stone often while sharpening to keep the stone's pores open so it keeps cutting steel. Do several rounds of sharpening to each side of the blade.

STEP 5 Once you feel you've sharpened enough, remove burrs and polish the edge by stropping the blade against a leather belt or log (or even your pants if you're careful).



STEP 6 Test the edge with a small carving or slicing task. If you're not satisfied, sharpen and strop again.

200 TREAT FOR SHOCK

Trauma will cause the body to divert blood to vital internal organs, leading to shock—which can be fatal if not treated properly. Signs include paleness, rapid pulse, and cold, clammy skin. Other signs like vomiting or gasping for air occur as shock worsens.

Lay the victim down, elevate her legs, and keep her head low. Treat any visible injuries, and loosen restrictive clothing. Keep her warm with blankets or coats, and keep her talking to focus her mind. Reassure her that everything will be okay.

201 SET A BONE

If a fracture is misaligned, blood circulation is reduced, healing time is extended, and worse, the limb may be lost if the break is bad enough.

STEP 1 First, assess the break. Many won't need to be set, but if the bone is displaced you might have to. If the bone is protruding, don't move it. Cover it with a moist saline dressing, immobilize it, and get medical help.

STEP 2 Check for blood flow by gently compressing the skin below the fracture. If the skin does not quickly restore to normal color, you should set the bone to restore circulation. Pull slowly but firmly along the long axis of the bone to reset the break.

STEP 3 Apply a splint and wrap with bandages. The splint can be an air cast or a rigid cardboard, plastic, aluminum, or wood panel with padding for stability and comfort. Secure the cast above and below neighboring limb joints, or immobilize with a sling.

202 PERFORM THE HEIMLICH MANEUVER

Someone who's truly choking cannot breathe or tell you what's happening. He'll often grab at his throat, but it's up to you to recognize the situation and act quickly.

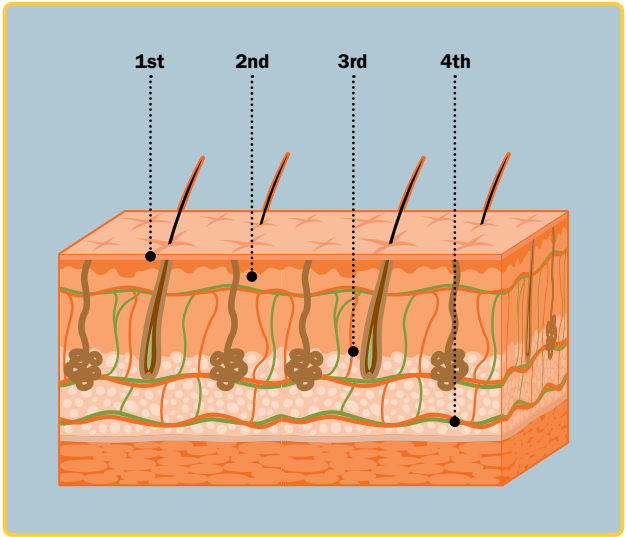
Stand behind the victim and put your arms around his waist, with one fist below the ribs and above the navel, and your other hand covering your fist. Pull your fist upward and into the abdomen, pressing firmly with both hands. Repeat the motion until the airway is cleared.

If you can't reach around the person or he passes out, lay him on his back and then perform the maneuver while straddling his legs or hips.

If you're dealing with a very small child or infant who is choking, cradle her in one arm and compress her chest with your fingertips five times, alternating this with turning her over and applying five firm slaps to her midback until the airway is cleared.

203 IDENTIFY & TREAT BURNS

The skin is the body's largest organ and its primary defense system. A burn's severity (and its course of treatment) depends on how deep it penetrates the layers of tissues.



1ST DEGREE These types of burns are superficial and are caused by anything from sun exposure to hot fluids. They heal on their own but you can apply cool compresses or aloe vera gel, and speed along the healing process with anti-inflammatories.

2ND DEGREE Partial-thickness burns, a.k.a. second-degree burns, penetrate the outer dermis and can raise blisters. Flood the area with cool water and trim loose skin (but leave blisters alone to avoid infection). Aloe vera and bandages are recommended, but if the injury is to the face, hands, feet, or groin, seek skilled medical attention.

3RD DEGREE These are also called full-thickness burns, having penetrated all layers of the skin. Tissues are often dry, stiff, leathery, and painless (due to nerve damage). Cover with a dry dressing and immediately get help.

4TH DEGREE These burns penetrate through skin and into muscle, fat, and bone. These are the most severe and require extensive, skilled medical care.

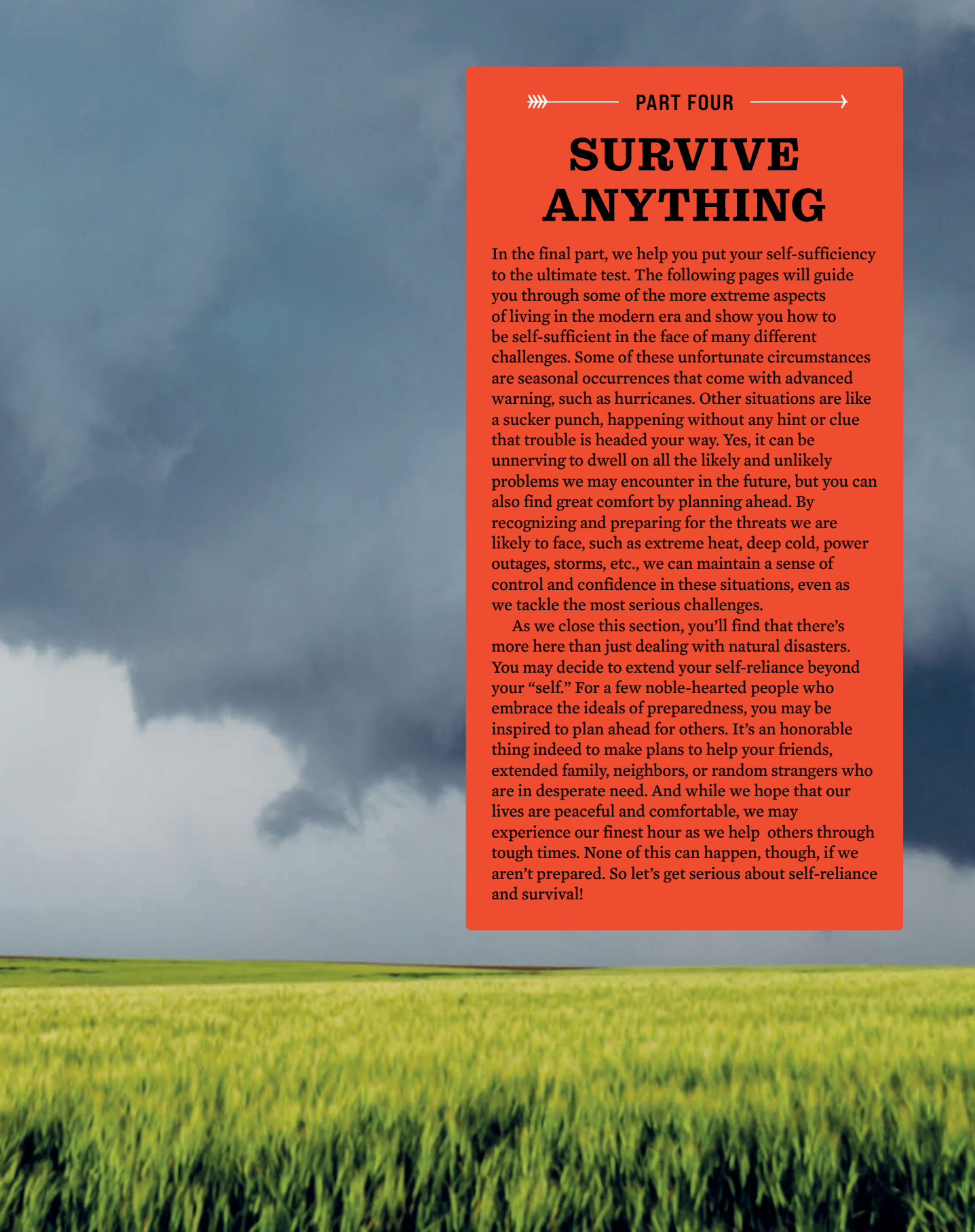
204 REMOVE STITCHES

Most sutures these days dissolve over time. Those that do not dissolve are removed by a doctor in a follow-up to the original injury. But removing them yourself isn't so hard. If you're in a situation where the healing is done and the stitches are still in, removing them yourself can at least save you a trip to the doctor (if not a copay).

WARNING
This respirator helps protect against certain particles. Misuse may result in sickness or death. For proper use, see supervisor or box
N95

PART FOUR

GETTING SERIOUS



PART FOUR

SURVIVE ANYTHING

In the final part, we help you put your self-sufficiency to the ultimate test. The following pages will guide you through some of the more extreme aspects of living in the modern era and show you how to be self-sufficient in the face of many different challenges. Some of these unfortunate circumstances are seasonal occurrences that come with advanced warning, such as hurricanes. Other situations are like a sucker punch, happening without any hint or clue that trouble is headed your way. Yes, it can be unnerving to dwell on all the likely and unlikely problems we may encounter in the future, but you can also find great comfort by planning ahead. By recognizing and preparing for the threats we are likely to face, such as extreme heat, deep cold, power outages, storms, etc., we can maintain a sense of control and confidence in these situations, even as we tackle the most serious challenges.

As we close this section, you'll find that there's more here than just dealing with natural disasters. You may decide to extend your self-reliance beyond your "self." For a few noble-hearted people who embrace the ideals of preparedness, you may be inspired to plan ahead for others. It's an honorable thing indeed to make plans to help your friends, extended family, neighbors, or random strangers who are in desperate need. And while we hope that our lives are peaceful and comfortable, we may experience our finest hour as we help others through tough times. None of this can happen, though, if we aren't prepared. So let's get serious about self-reliance and survival!

205 ASSESS & RESPOND TO AN EMERGENCY

Who is the true hero in an emergency? It's not necessarily the action-star type who comes in swinging. In real life, someone who is calm, cool, and collected is much more likely to save the day. Silly as it may sound, practicing strategies to remain calm may very well set you up to succeed when the chips are down. For example, do you get infuriated when someone cuts you off in traffic? Freak out when the bathtub starts overflowing? Get squeamish at the sight of blood? In each of these cases, take a moment, assess the situation, ask yourself if your reaction is helping to make things better, and, if not, find something constructive and helpful that you can do. If you train yourself to handle life's little emergencies, you'll be much better at dealing with life-threatening events. Here are some basic concepts to keep in mind.

DON'T PANIC Take an extra moment to breathe deeply and calm yourself before taking any action.

BE REALISTIC Assess what you can realistically do to make a situation better. Prioritize your own health and safety and that of your family.

USE LOGIC Don't think about what you want in an ideal world, or what should happen, or what you hope you can talk others into doing. What's the best, most logical course of action based on your skills, abilities, and resources? Do that. Worry about everything else later.

206 SURVIVE ANYTHING

People with no skills and no gear have survived seemingly insurmountable scenarios, simply because they had the right mindset not to become a casualty.

MENTAL TOUGHNESS The strength of your will and the toughness of your mind can trump physical prowess in survival situations. You must learn to tolerate the intolerable, suffer through the insufferable, and overcome your weakness and your desire to give up.

BE AWARE: PANIC Panic is one of your worst enemies. It costs people their lives because it blocks logical thinking and allows the disconnection of your imagination from reality, which can be very dangerous during traumatic events. Stay positive and maintain a firm grip on the situation. Carefully monitor yourself and other survivors for depression, anger, frustration, hyperactivity, feelings of intense guilt, ideas of suicide, and irrational behavior. Lend others as much support as you can, and don't let a negative mental state sneak up on you or worsen your situation.

MOTIVATION What motivates a person to stay alive when everything has gone wrong? Many survival stories speak of the survivor's devotion to a higher power or their intense desire to get back to family, friends, and loved ones. Motivation is the mental aspect that keeps people going beyond all hope or reason.

BE AWARE: IGNORANCE Despite the wealth of information available to the world today, there are a lot of people who couldn't survive even a minor emergency. Most people assume that survival skills are easy because they look easy on TV, and so they overestimate their own abilities. You need to know what to do and how to do it, and you need to have done it before in order to truly possess the skills to survive.

ADAPTABILITY Adaptability and survival have always been closely related. The ability to adapt to changing events, situations, and environments is one of the most impressive and necessary parts of a survivor's mind-set. You must be able to recognize what's worth continuing and what needs to be abandoned.

BE AWARE: STUBBORNNESS Stubbornness can be a real stumbling block for some people, and it's often confused with tenacity. Don't be afraid to change your mind. If something isn't working, change it up. Don't let your stubborn side get you or someone else killed.

207 OBEY THE RULE OF THREES

A great way to categorize dangers is by using the Rule of Threes. This time-honored teaching tool breaks down dangerous hazards in increments of time. There are a lot of variables that could change these numbers, but this chart will give you a good framework of issues and survival tasks.

	3 SECONDS	3 HOURS	3 DAYS	3 WEEKS
DANGER	You have only 3 seconds to live without blood flow to the brain.	You have only 3 hours to live without adequate shelter.	You have only 3 days to live without water to drink.	You have only 3–4 weeks to live without food.
SITUATION	This would be your concern in the event of a traumatic event, such as an attack.	Among the most critical scenarios are those where hypothermia or hyperthermia can be a factor.	Dehydration is a killer, and it can do its work in less than 3 days under hot, dry conditions.	This varies quite a bit based on your metabolism, activity level, and overall health. Medical issues, such as dysentery, can drastically shorten this window in a bunker scenario.
PRIORITY	This puts security as your top survival priority in most scenarios.	This rule places shelter from the elements as our second survival priority. Find a way to warm up in cold situations or cool down when it gets hot.	Your survival priority is to find water and make it safe to drink. Desert survival and flood disasters are notorious for preventing people from getting safe water.	Food is your lowest survival priority on this list, but of course it's still vital. Resupply issues and scarcity could drag out starvation for months.

208 DEVELOP AN ATTITUDE

An upbeat, positive attitude can be a major asset in an emergency situation. In this case, "positive" doesn't mean "irrationally cheerful" but rather a levelheaded calm with an optimistic spin. That said, there's room for a more aggressive stance, especially when trouble or danger looms.

Of course, we're not suggesting you go berserk on anyone, just noting that a dose of properly harnessed aggression can give you a wellspring of energy in a survival emergency. Get mad. Get mean. Let nature know that you're not going to lie down and take it. You're going to fight to stay alive.

209 UNDERSTAND THE CRISIS

Being prepared for disaster means knowing the possibilities. Sometimes, a full-blown state of emergency is just a more extreme version of the minor inconveniences you've faced once (or many times) before.

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
POWER OUTAGE	ROLLING BROWNOUTS	WEEKLONG BLACKOUT	GRID FAILURE
AFTERSHOCKS	MINOR QUAKES	MAJOR QUAKES	THE BIG ONE
VOLCANIC ASH INTERFERES WITH AIR TRAVEL	HEAT AND ASH CAUSE HEALTH ISSUES	EVACUATIONS / LOCAL DESTRUCTION OF CITIES	MEGAVOLCANIC ERUPTION

210 GET FAMILIAR WITH THE SCOPE

With all these potential disasters, you may be wondering where to start. Let's look at the reach of each type of crisis.

MINOR, SMALL-SCOPE DISASTER	LOCAL AREA	A FEW HOURS TO A FEW DAYS	LIMITED SERVICES AND UTILITIES; AVAILABLE FOOD AND WATER; INTACT NATIONAL INFRASTRUCTURE
MINOR, LARGE-SCOPE DISASTER	REGIONAL AREA	5–14 DAYS	LIMITED SERVICES AND UTILITIES; LIMITED AMOUNTS OF FOOD, WATER, AND FUEL; INTACT NATIONAL INFRASTRUCTURE
MAJOR DISASTER	NATIONAL AREA	15–60 DAYS	NO SERVICES AND UTILITIES; NO FOOD, WATER, OR FUEL; SOME DISRUPTION OF NATIONAL INFRASTRUCTURE
GLOBAL DISASTER	WORLDWIDE	MORE THAN 2 MONTHS	NO SERVICES AND UTILITIES; NO FOOD, WATER, OR FUEL; COMPLETE COLLAPSE OF GOVERNMENT AND/OR FINANCIAL INFRASTRUCTURES

211 KNOW YOUR REGION

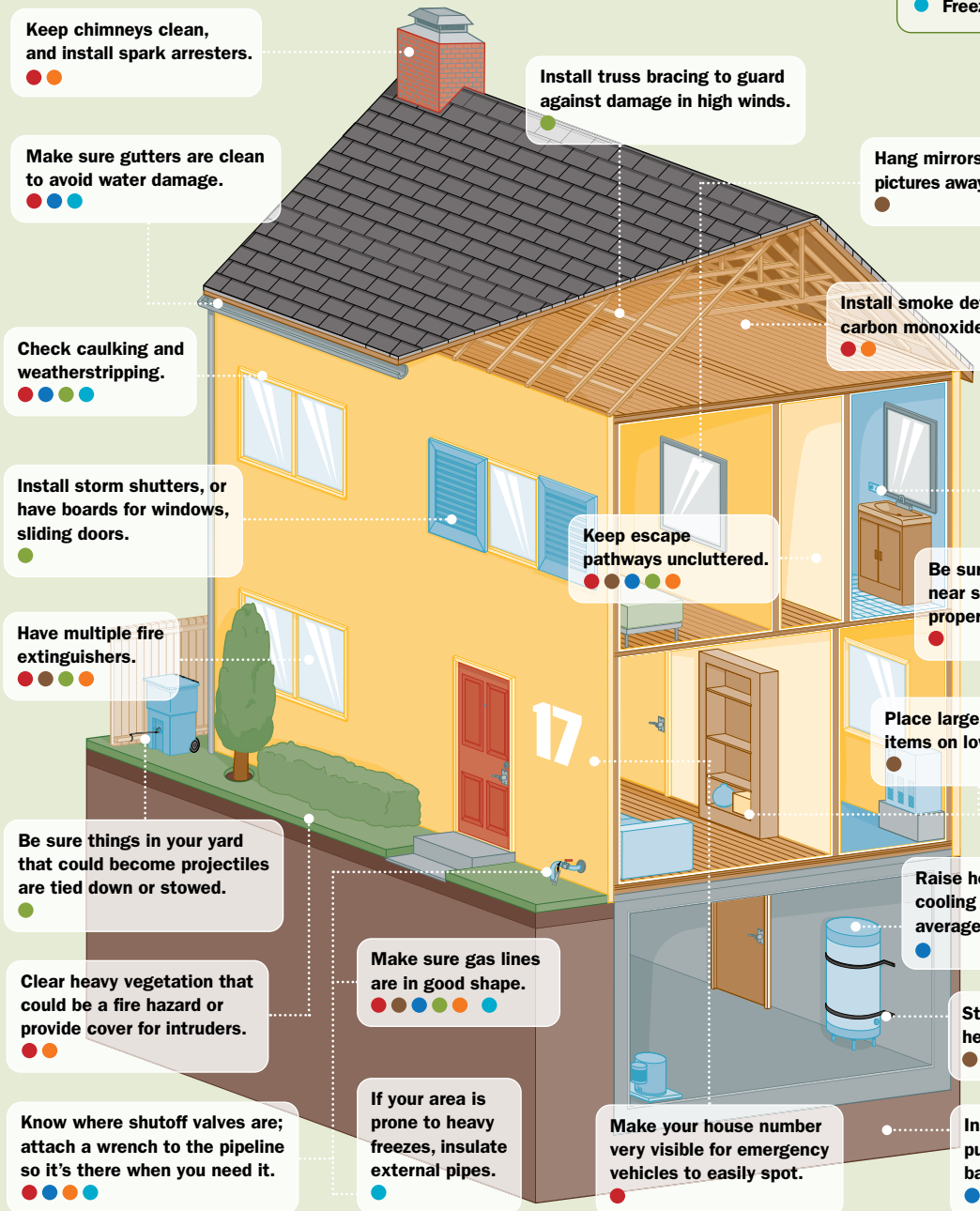
Wherever you live, you probably think that you know what you need to worry about. But do you really? Especially if you're a recent arrival, it makes sense to do some research. For instance, if you live in California, you know to be prepared for earthquakes. But did you know that the state has also been hit by tsunamis? Or that earthquakes often lead to fires? Similarly, Missouri residents know to prep for tornadoes—but many may not know that their state has also experienced powerful earthquakes in the past. Luckily, there is a lot of overlap in the survival priorities you need to make it through most natural and manmade disasters. In preparing for one potential disaster, you end up preparing for most scenarios.

212 DISASTER-PROOF YOUR HOME

Okay, full disclosure. You can't disaster-proof your home, at least not against every disaster. That said, there's a lot you can do to ensure that it comes through relatively unscathed. And a lot of this is basic stuff you really should be doing anyway.

DISASTER

- Basic safety
- Earthquake
- Flooding
- High winds
- Fire
- Freezing



Keep chimneys clean, and install spark arresters.

Install truss bracing to guard against damage in high winds.

Make sure gutters are clean to avoid water damage.

Hang mirrors and big pictures away from beds.

Install smoke detectors and carbon monoxide detectors.

Check caulking and weatherstripping.

Install storm shutters, or have boards for windows, sliding doors.

Keep escape pathways uncluttered.

Be sure outlets near sinks are properly grounded.

Have multiple fire extinguishers.

Place large, heavy items on lower shelves.

Be sure things in your yard that could become projectiles are tied down or stowed.

Raise heating and cooling units above average floodline.

Make sure gas lines are in good shape.

Clear heavy vegetation that could be a fire hazard or provide cover for intruders.

Strap water heater to wall.

Know where shutoff valves are; attach a wrench to the pipeline so it's there when you need it.

If your area is prone to heavy freezes, insulate external pipes.

Make your house number very visible for emergency vehicles to easily spot.

Install sump pump in basement.

213 STOCK THE RIGHT SUPPLIES

An easy way to think of life after a disaster is to imagine living in the 1800s. You have some comforts, but most tasks are accomplished with a lot more work than in modern times. Assuming you didn't have to abandon your home in a disaster, you'd only need the basics for that home to remain livable. You still have your clothes, bedding, and pots and pans, though the utilities could be out for a while.

WATER Since water may be unavailable or possibly contaminated after a disaster, keeping a supply of safe, drinkable water is key to survival. A few factory-sealed water cooler jugs will stay safe for a year or more, ready to drink if needed. One 5-gallon (20-l) jug per family member is a good start. Also, plan to resupply with a water filter or disinfection tablets.

YOU'LL NEED

- MULTIPLE FLASHLIGHTS
- EXTRA BATTERIES
- BATTERY-POWERED OR HAND-CRANKED RADIO THAT HAS NOAA WEATHER BANDS
- UTILITY SHUT-OFF WRENCH, WHICH CAN TURN OFF GAS AND WATER, IF NEEDED

FOOD You'll need some no-cook or easy-to-cook food. Keep at least a week's supply of nonperishable food per family member, and throw in a manual can opener. Have a way to cook, like a camping stove with abundant fuel, if you have a safe place to operate it; a hot meal can be morale-boosting and easier to digest.

EXTRAS: WHAT ELSE? Check the handy checklist above. Stash everything except the water in a big plastic bin, so you can transport it if you have to evacuate your home.

Last, don't forget things like a favorite treat, good book, or inspirational item to help keep your spirits up.

Utility shut-off wrench

214 DRILL FOR SUCCESS

Mark some dates on your calendar to perform emergency drills with your family. They may not want to participate, but find a way to get them involved nevertheless. Here are some emergency drills that can keep a family's skills sharp.

DISTANT CONTACT Have each family member contact a friend or relative who lives outside your area without using a cell phone or landline phone. This could be done through email, social media, satellite phone, ham radio, or even a carrier pigeon. Get creative!

SUPPLY SHAKEDOWN Pull out all of your emergency supplies, take inventory, check expiration dates, use up older items, replace them with new supplies, and make sure you end up with a few more items stashed away each time you do this.

FIRE DRILL Start with a classic fire drill, in which you practice evacuating the home on short notice. Make sure you have a planned meeting place outside the home, and have everyone low crawl out of the house when you sound the alarm. For more advanced drills, eliminate the easy exits and add some obstacles. Also, round off the exercise with some stop, drop, and roll every time you have a fire drill.

EVAC DRILL Take the fire drill one step further with a mock evacuation. Announce that everyone has 2 minutes to grab some clothes and supplies and get to the family vehicle.

215 PUT ACTION IN YOUR PLAN

Counting water bottles and inspecting batteries aren't the only things you'll want to do for emergency planning. You and your family will need to be prepared to act—especially on short notice. Get every family member involved!

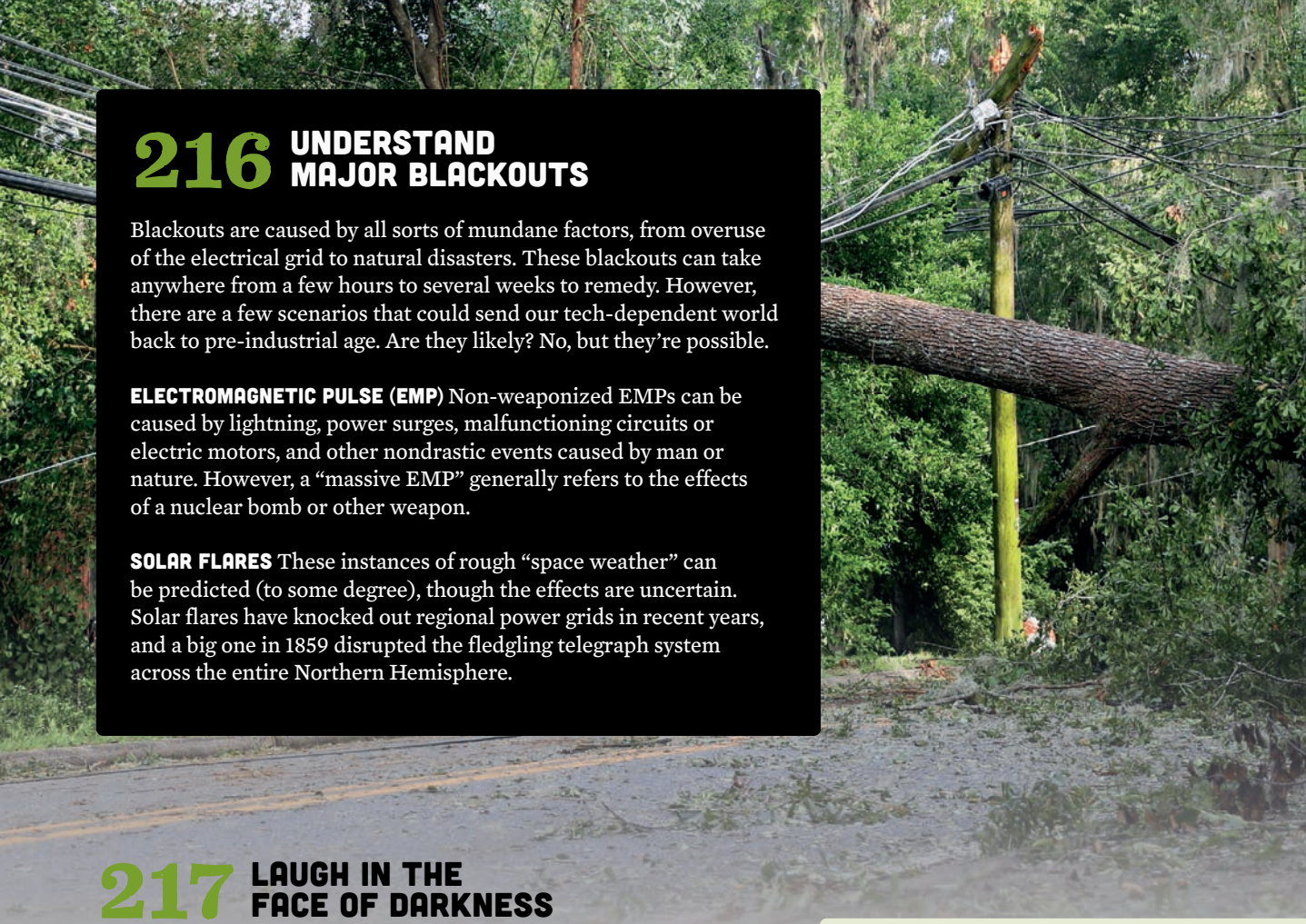
GET THE LAY OF THE LAND Draw a map of your home and every potential escape route.

PLAN A MEETING PLACE Determine a meeting place near your home, if your family needs to rally outside of the house.

GO FURTHER ABROAD Pick a meeting place outside of your neighborhood, to be used if you cannot return home or are told to evacuate.

LOOK AT THE ROUTES Decide which route you'd take to get to meeting places, plus an alternate route in case the first is unusable.

CHOOSE A CONTACT Pick a contact person outside of your immediate area who could relay messages if your household is separated or unable to communicate with each other.



216 UNDERSTAND MAJOR BLACKOUTS

Blackouts are caused by all sorts of mundane factors, from overuse of the electrical grid to natural disasters. These blackouts can take anywhere from a few hours to several weeks to remedy. However, there are a few scenarios that could send our tech-dependent world back to pre-industrial age. Are they likely? No, but they're possible.

ELECTROMAGNETIC PULSE (EMP) Non-weaponized EMPs can be caused by lightning, power surges, malfunctioning circuits or electric motors, and other nondrastic events caused by man or nature. However, a "massive EMP" generally refers to the effects of a nuclear bomb or other weapon.

SOLAR FLARES These instances of rough "space weather" can be predicted (to some degree), though the effects are uncertain. Solar flares have knocked out regional power grids in recent years, and a big one in 1859 disrupted the fledgling telegraph system across the entire Northern Hemisphere.

217 LAUGH IN THE FACE OF DARKNESS

Want to be ready for an electricity-free world? Unless you require electrically operated equipment to stay alive (pacemakers, dialysis machines, etc.), electricity is a luxury. The majority of humans who have ever lived did so without electricity. You can, too, if you follow these steps.

STEP 1 Don't store so much food in your fridge and freezer. If the power goes, one can only eat so much ice cream in a sitting. Instead, stock up on canned goods and shelf-stable foods.

STEP 2 Have several different ways to cook your food and provide light in your home. These should work safely throughout all seasons. Flashlights are a safe and practical option—just make sure the rechargeable ones are charged in case of an EMP. Candles and light sticks will work no matter what.

STEP 3 In an event with power outage but no damage to electronics, have a way to charge your cell phone. Solar chargers are nice, and AA-battery chargers are cheaper and more available. Also consider keeping some two-way radios for closer communication.

STEP 4 Model yourself after low-tech cultures. The beauty and simplicity of less technologically dependent cultures will be very evident in a grid-down situation.

219 CHARGE A CELL PHONE IN A BLACKOUT

While not a long-term solution to loss of the power grid, this DIY battery system can charge a cell phone enough to give you several days' worth of phone use. Sometimes, just that much can be a lifesaver. Note that this system requires a marine battery, which is similar to a car battery but safe to use indoors (car batteries give off harmful fumes). Purchase a 55-aH 12-volt "advanced glass mat" (AGM) battery, widely available at home improvement or boating stores.

218 EMPLOY PEOPLE POWER

No electricity to operate your fancy electric can opener? Good, shame on you for owning one. Stick to manually operated devices that work in all conditions. Check out camping and specialty catalogs—there are a surprising number of choices out there.

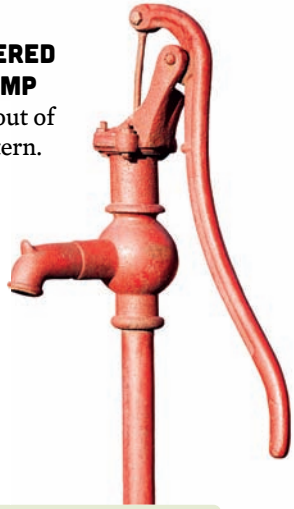
MANUAL CAN OPENER
The P38 is a military classic, and it fits on a key chain.

HAND-CRANKED RADIO
For emergency updates and entertainment.

GRAIN AND MEAT GRINDERS
Will make flour from whole grains or create "hamburger" from available critters.

WINDUP FLASHLIGHT
For obvious lighting purposes.

HAND-POWERED WATER PUMP
To get water out of a well or cistern.



CRANK COFFEE GRINDER
For the coffee addicts.

YOU'LL NEED

- BATTERY WALL CHARGER
- CIGARETTE LIGHTER ADAPTER
- CELL PHONE CAR CHARGER
- VOLTMETER

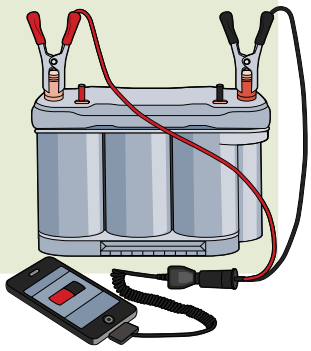
Always wear safety goggles and take great care when working with batteries. While AGM batteries are less toxic than car batteries, they contain acid and will hold a charge.

STEP 1 Be sure your battery is fully charged using the voltmeter (basically just jumper-cable style clips that go to an electrical plug). When you store your battery, be sure to check it every three months with the voltmeter. If it drops below 12.4 volts, charge it up so it'll be ready to go when the lights go out.

STEP 2 Attach the clip-on cigarette lighter port to your battery (it's easy—the port is attached to wires with jumper cable-like clips).

STEP 3 Plug in the phone charger, just like you would in your car, and charge your phone. Results will vary based on your phone and the battery, but you should be able to recharge your phone fully for more than a week with this system.

STEP 4 Periodically insert the voltmeter into the cigarette lighter adapter to check on your voltage, as you don't want to run your battery down too far. As when it's in storage, never let it drop below 12.4 volts.



220 HEAT WITH THE SUN

If the grid is down in chilly weather, an emergency can leave the modern home or apartment dangerously cold. Death from hypothermia is a very real threat to your safety, especially in subfreezing temperatures coupled with a utility outage. Managing the sun coming into your dwelling is an easy and safe way to gain heat in a cold-climate catastrophe. Yes, a home heating solar array on your roof would be a good idea for frosty locales, but you can still get a warming effect with smart use of the assets that you already have. Take advantage of passive solar heat during daylight hours by staying in a room with south-facing windows. Lay out dark-colored blankets and rugs on the floor and furniture to help absorb the heat from the sunlight. Thick drapes or improvised insulation can block the chill coming off the windows after sunset.

221 WARM UP SAFELY

Don't replace one danger with another by swapping hypothermia for a house fire. Rely on these safety tips to keep a bad situation from getting worse.

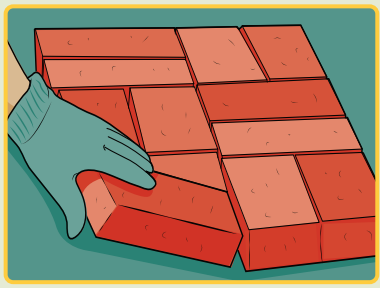
TAKE CARE WITH CANDLES Candles are a problematic heat source, commonly causing home fires in already troubling emergency situations. Limit their use—if you have enough candles to create warmth in a room, you also have a serious fire hazard. Always make sure you have a working smoke alarm with a carbon monoxide detector.

FOCUS ON ONE ROOM Pick one area, preferably a smaller room with a low ceiling, to be your main living area during the emergency. Don't even try to heat every room in the house—it's a waste of time and resources.

VENTILATE You're just begging for carbon monoxide poisoning if you use a propane heater, a grill, or a gas stove for a heat source indoors. Even a kerosene heater needs to have some fresh air. Don't use combustion without ventilation.

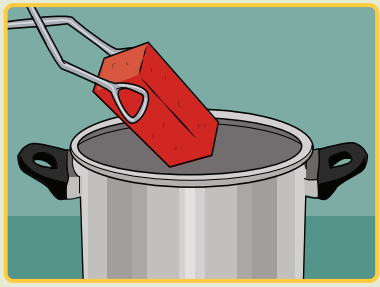
222 USE BRICKS & STONES TO HEAT YOUR HOME

While you can't heat a room with hand-warmer packs, you can certainly heat yourself up by keeping a few of them in your pockets. Building on the concept of portable radiant heat, you can also turn rocks and bricks into small, heavy space heaters.

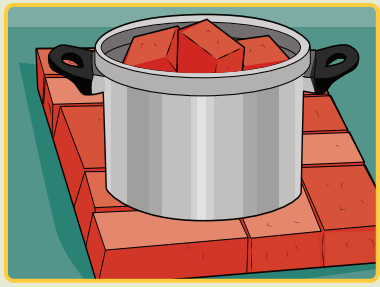


STEP 1 Safety first! You'll need to set up a heatproof platform in the room you intend to heat. A 2-foot (0.5-m) square of bricks on the floor will work fine. Then get some rocks or a few bricks from a dry location.

STEP 2 Fire up the grill or build a fire outside, and throw the rocks or bricks in the fire to heat them up. Heat for about 45 minutes and then scoop them out with a shovel. Get all the coals and sparks off the bricks or rocks before continuing.



STEP 3 Drop the bricks into a stainless-steel cooking pot. Other types of pots can be damaged by the heat, and galvanized buckets can release toxic vapors with heat exposure. Stick with the steel pot.



STEP 4 Carefully bring the hot rocks or bricks inside and set the pot on your fireproof, heatproof platform. Repeat as needed every few hours.

TOP TIP

Stinky but easy to use, kerosene heaters can be burned indoors (if the particular model was designed for indoor use—check the instructions or labels). Just crack a window for a little ventilation and stock up on kerosene before bad weather hits.

223 SURVIVE BEING SNOWBOUND IN A CAR

If you're stuck in a blizzard, a vehicle can protect you from wind and snow, and its visibility increases the odds that a search crew will find you. But in bitter cold, your car will likely feel like a freezer, because metal and glass offer no insulation. Thankfully snow offers remarkable insulation, which helps keep you warm inside your car.

STAY PUT Remain in your vehicle where rescuers are most likely to find you. Only leave if you see a better option for shelter, such as a building.

SIGNAL FOR HELP Check your mobile phone signal, and attempt to call, text, or post to social media that you've been stranded. If in a remote area, stomp large block letters in an open area spelling out HELP or SOS; line with rocks or tree limbs to be visible from the air.

GET NOTICED Tie a brightly colored piece of cloth to the antenna or top of the car. Check every few hours to make sure snow hasn't covered it. Keep snow off the car's hood so searchers can spot the color contrast from the air.

PILE IT ON Keep a shovel in the trunk. A foot of snow piled onto the passenger compartment will help turn it into a snow cave of sorts.

WARM UP Huddle with other passengers, make use of any clothing or blankets you have in your vehicle, and run the heater in short bursts to make the most of the fuel you have. Periodically clear snow from the exhaust pipe to prevent carbon monoxide poisoning. If you have candles, light one up—it'll deliver an amazing amount of warmth.

KEEP MOVING Exercise every so often inside the car to keep your circulation going.

RATION SUPPLIES Conserve food, water, fuel, and battery power. You never know how long you'll be stranded.

KEEP WATCH Take turns sleeping, as falling asleep can be deadly if it's cold enough. One person should be awake at all times to look for rescue crews and to keep an eye on the other occupants of the vehicle.

224 GET THROUGH A BLIZZARD AT HOME

Once a blizzard hits, it's best to stay in the protective shelter that your home provides. If you're in snow country, check the weather forecast daily. Shop for extra supplies if a storm is inbound.

STOCK UP Make sure your winter shelter-in-place survival kit is well loaded with the usual essentials, plus some extra blankets, sleeping bags, and heavy coats and other warm clothing. Stock up on sand, rock salt, and snow shovels to manage the snow after the storm is over. Consider buying some new board games or other forms of entertainment that don't rely on power.

WATCH YOUR WATER Severe cold can freeze pipes, leaving you without drinking water or the ability to use your bathroom. Store extra water in containers where it won't freeze.

WINTERIZE YOUR HOME Look for ways to make your home more resilient. Hang thick curtains over the windows for insulation. In the daytime, keep your curtains and blinds open to allow sunlight in. At night, keep them shut to trap heat inside.

STAY WARM Stock up on fuel for a wood-burning stove or fireplace. Huddle with others in a smaller interior room with no windows to maximize warmth. Close doors to any rooms not in use to make better use of the available heat.

KEEP DRY If you must go outside, change out of wet clothing as soon as possible to prevent loss of body heat. Wet clothing loses its insulating properties, which can lead to frostbite or hypothermia.

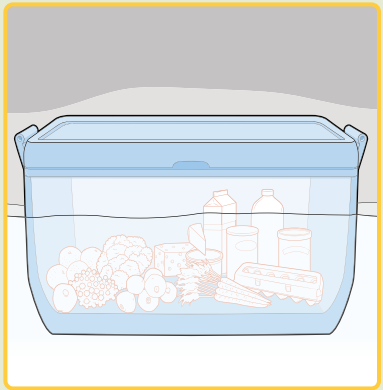
225 SET UP A SNOW PANTRY

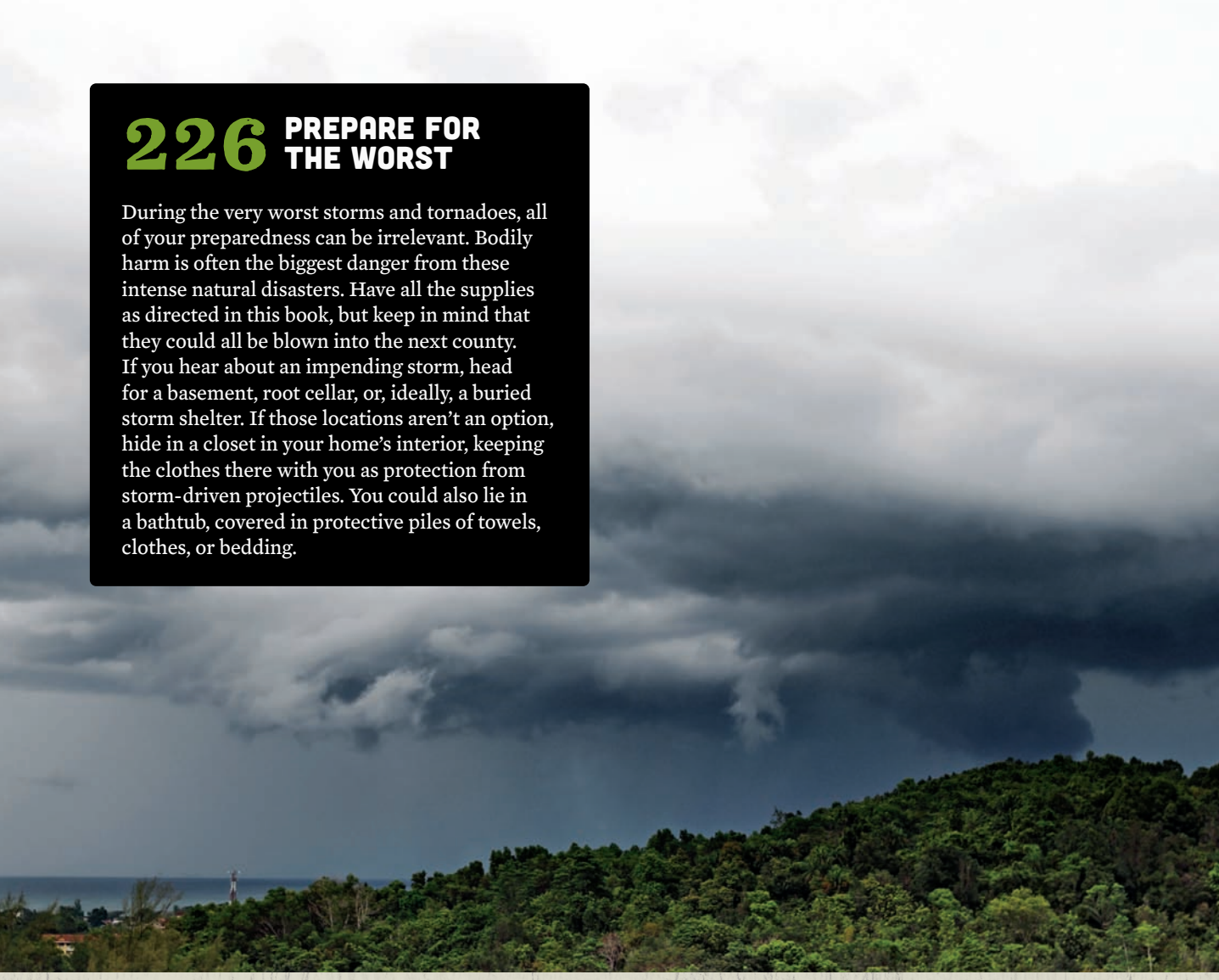
If you lose power in a winter storm, one thing you don't have to worry about is keeping your perishables stored safely. All you need is a shovel, a footlocker, a cooler, or anything that is enclosed with a door to protect your food from scavengers.

STEP 1 Dig a hole in the snow or pile snow up and around the box to cover it in at least 1 foot (30 cm) of snow.

STEP 2 Place all perishable items into individual plastic bags to reduce odors that might attract animals.

STEP 3 Place food into the box and close it. Cover the opening with snow to further insulate your improvised freezer.





226 PREPARE FOR THE WORST

During the very worst storms and tornadoes, all of your preparedness can be irrelevant. Bodily harm is often the biggest danger from these intense natural disasters. Have all the supplies as directed in this book, but keep in mind that they could all be blown into the next county. If you hear about an impending storm, head for a basement, root cellar, or, ideally, a buried storm shelter. If those locations aren't an option, hide in a closet in your home's interior, keeping the clothes there with you as protection from storm-driven projectiles. You could also lie in a bathtub, covered in protective piles of towels, clothes, or bedding.

227 BUILD A BASEMENT BUNKER

If you have a basement, this humble and musty part of your home could be a refuge in the event of tornadoes, robbery, and other life-threatening events. However, it has to be modified for this kind of use. Here is some work to consider doing before it's too late.

REINFORCE Install steel doors with multiple locks and reinforced steel doorframes to be able to seal off the basement from the inside.

COVER UP Create window covers for any basement windows—ideally one for each window exterior. The best covers are steel shutters that can be locked in place.

GET STOCKED Unless you live in a flood-prone area, store a large percentage of your food, water, and supplies down in the basement bunker so that it is well stocked if the need arises. Make sure your things are packed in watertight containers in case of flooding.

CALL THE PLUMBER If the plumbing doesn't exist already, install a toilet and sink in the basement. One notable exception, however, is if you are the lowest house on your street and all the houses are on a city sewage system. A power outage, line blockage, or waste-water treatment plant malfunction could allow all of your uphill neighbors' sewage to back up into your basement.

228 FIGHT BACK AGAINST FLOODING

Staying safe during a flood takes a combination of proper planning and quick thinking. Be aware of flood hazards no matter where you live, but especially if you're in a low-lying area, near a river or bay, or downstream from a dam. In low-lying or flood-prone areas, a NOAA (National Oceanic and Atmospheric Administration) weather radio with an alarm can be a lifesaving investment.

BE READY If you have a day or more to prepare, move important things to the highest and driest location in your home. Pack any and all important and irreplaceable papers, photos, files, and data to take with you if you evacuate.

BE AWARE Stay very alert to flood watches and warnings for your local area and the areas upriver and upland from your location.

MOVE FAST If you only have minutes to get out, don't waste time gathering possessions. Things can be replaced, but lives cannot. Don't wait to be told to move to higher ground if authorities say flash flooding is possible.

STOCK WATER Contamination can be a big deal during and after a flood, so make sure you have a safe supply of a gallon (4 l) of water per person per day—both in your home and if you evacuate.

BUG OUT RIGHT Prepare to evacuate well in advance, and be sure your car is stocked with plenty of cash, no-cook foods, spare clothes, sanitation items, your cell phone charger, rain gear, and other essential supplies in case you have to provide for yourself and your family for some time.

DON'T DIG IN Never decide that you're smarter than the experts and that you can ride out the storm. If you are told to evacuate: DO IT! And as you go, beware of streams, ditches, drainage channels, canyons, and other low-lying areas. Flash floods can happen in these places even far away from the rainstorms.

DRIVE SAFELY Never drive through even shallow floodwaters—turn around and find another path. Even seemingly safe water can pick your car up and sweep it away.

229

FIND A QUAKE-SAFE SPOT

Earthquakes are unpredictable, meaning that you never know when one is about to hit. So the best way to prepare is the same as for other disasters. Stock up on food, water, and medical supplies. Make sure to locate the safest place in your home to ride out a quake, and at your office, too, in case you're on the job when disaster strikes.

FIRST CHOICE Get to a place outside where nothing can fall on you.

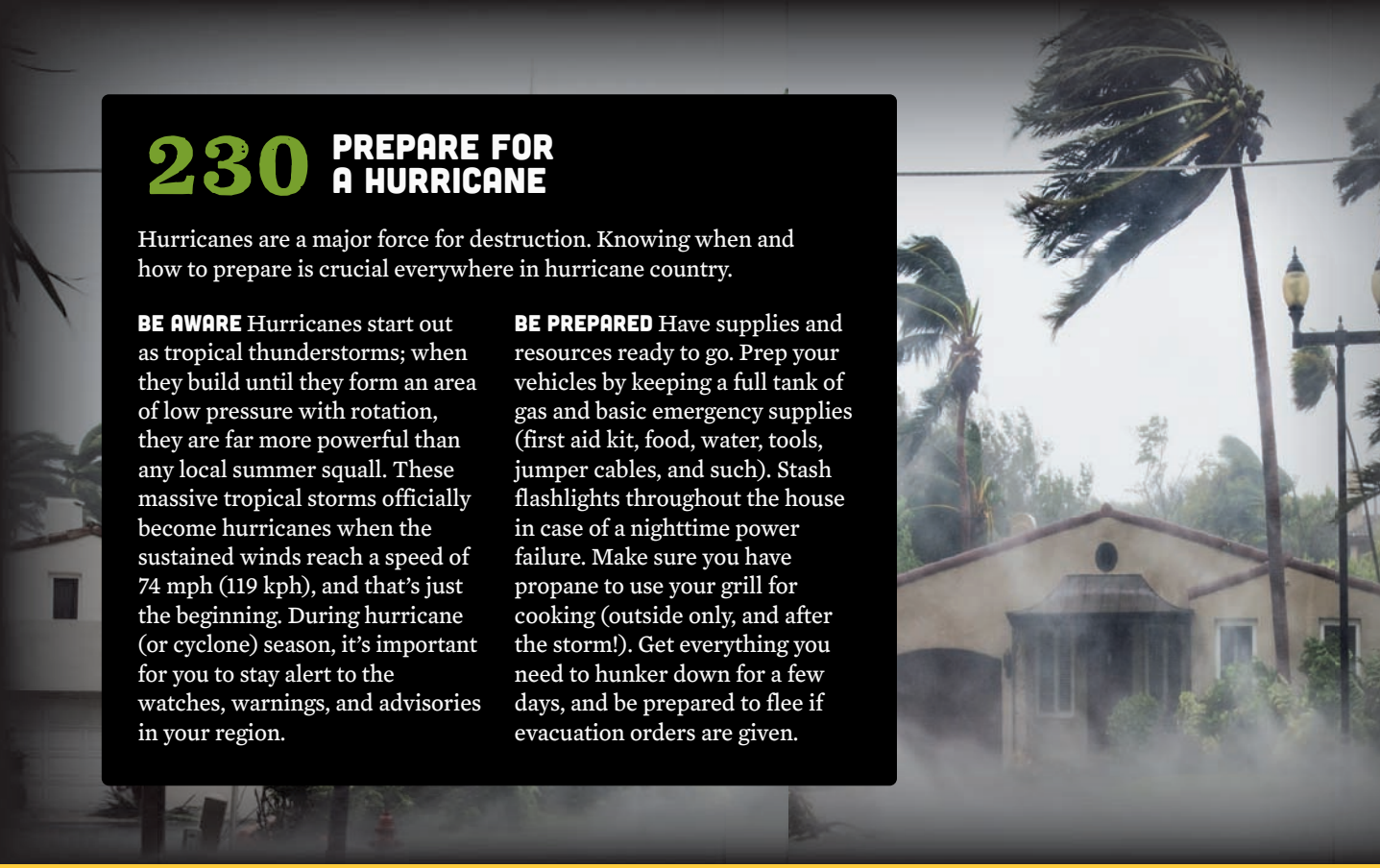
SECOND CHOICE Get under structurally reinforced areas like doorways (one you know is secure) or near load-bearing walls.

THIRD CHOICE Get next to a heavy table, desk, or large piece of furniture to deflect anything that might fall around you.

FOURTH CHOICE Get in an interior room with no windows.

FIFTH CHOICE Get in a closet in the center of the structure.

These last two options are dicey, as you can get buried with few paths of escape. But they beat getting crushed to death.Your best bet is to be outside, safely away from tall trees and buildings.



230 PREPARE FOR A HURRICANE

Hurricanes are a major force for destruction. Knowing when and how to prepare is crucial everywhere in hurricane country.

BE AWARE Hurricanes start out as tropical thunderstorms; when they build until they form an area of low pressure with rotation, they are far more powerful than any local summer squall. These massive tropical storms officially become hurricanes when the sustained winds reach a speed of 74 mph (119 kph), and that's just the beginning. During hurricane (or cyclone) season, it's important for you to stay alert to the watches, warnings, and advisories in your region.

BE PREPARED Have supplies and resources ready to go. Prep your vehicles by keeping a full tank of gas and basic emergency supplies (first aid kit, food, water, tools, jumper cables, and such). Stash flashlights throughout the house in case of a nighttime power failure. Make sure you have propane to use your grill for cooking (outside only, and after the storm!). Get everything you need to hunker down for a few days, and be prepared to flee if evacuation orders are given.

231 BE FIRE SMART

Have you thought about preventing and fighting fires in your home? Here are some things to consider.

GET ARRESTED If you have a fireplace, be sure you've got a spark arrester installed. In addition, inspect your chimney regularly, and keep it clean.

BE READY Kitchens are typically where home fires begin. Keep a fire extinguisher in plain sight. It's also wise to keep a fire extinguisher in a secondary location—perhaps one that would be fire-prone as well, such as a room with a fireplace.

GEAR UP Smoke hoods can also be a smart investment. These breathing filters fit over your whole head and protect your lungs from dangerous smoke. Keep one at the bedside of each family member, and practice using them so that you'll be ready to escape quickly and safely if they're ever needed.

SCREEN IT If you live in forest fire country (or anywhere, really—can't be too careful), cover any external vents with a fine metal screen to keep sparks from an external fire from entering your home.

232 DRAW A BATH

When a hurricane is predicted to make landfall in your area, your water supply may be affected. Prepare by filling up the bathtub with cold water. Plug the drain with a stopper and cover it with several pieces of duct tape, whether it tends to leak or not. Then fill the tub until the water reaches the overflow. You now have a backup for toilet flushing, cleaning, cooking (if it will reach boiling temperatures during food prep), and even for drinking (after disinfecting it, of course). Sure, bathtub water is less than appetizing, particularly from a nasty-looking tub. But it's far more pure than the flood waters after a storm, which may be your only other alternative.

233 BOARD IT UP

If you live in an area prone to massive storms, and shutters aren't an option, you can pre-cut pieces of sturdy plywood to cover your windows and doors. Your windows may not all be exactly the same shape, so cut each piece to fit a specific window and use a system of numbers and letters to make installation easier. For example, the front three windows of your home could be F1, F2, and F3, going from left to right. Use long wood screws to affix the plywood to the wall framing around doors and windows—don't just screw the plywood to the decorative trim on the surface, which can tear off.

234 KNOW YOUR FIRE TYPES

Not all fires are created equal, so there are a variety of fire extinguishers to choose from. Be sure you get the right one for the "right" fire. Various extinguishers often have a rating for the size of the fire (based on the extinguisher's size and contents), and its type, denoted by a colored geometric symbol.

CLASS A Marked with a green triangle, these extinguishers are for fires fueled by ordinary flammable materials: wood, paper, and some plastics.

CLASS B Extinguishers for this class, involving combustible liquids like gasoline or oil, and some gases (like acetylene or butane), bear a red square symbol.

CLASS C Electrical equipment, wiring, outlets, and appliances are the source of this class of fire. A blue circle is found on Class C fire extinguishers.

CLASS D Usually found in chemical laboratories or machine shops where combustible metals are used (like magnesium and sodium), this type of extinguisher is marked with a yellow star.

CLASS K You'll find a black hexagon on fire extinguishers for this type of fire, which includes kitchen fires that involve cooking oils or fats.

Class A extinguishers just use water—they won't stop some fires and may make them worse. Combined B/C-class extinguishers use carbon dioxide or a dry chemical powder. You can also find multipurpose foam or dry chemical extinguishers for class A, B, and C fires. Class D fires require special dry agents, and class K fires need dry powders or CO_2. Another, rare fire type is class E, involving radioactive materials, which should be handled by skilled hazmat personnel.

235 HANDLE A HEAT WAVE

Hotter-than-normal summers and record-breaking heat waves are occurring with greater frequency as each year passes. These events impact not only our environment, but also the health and safety of everyone in it. When you and your loved ones are caught in a protracted heat crisis, a little knowledge can keep you from becoming another casualty. The simplest solution is usually the best—stay out of the heat. If you do have to go out, do it in a cooler part of the day and monitor yourself and those around you for illness. Heat exhaustion can be identified by clammy moist skin, heavy sweating, cramps, dizziness, tiredness, nausea, vomiting, and a weak but fast pulse. More dangerous still is heat stroke. The key symptom of this is a body temperature of 104°F (40°C) or more. Heat stroke may be accompanied by other symptoms, such as a pounding headache, weakness, a dizzy or light-headed feeling, a rapid pulse, and one of the classic signs—the lack of perspiration. The dry, hot skin of a heat stroke victim is very different from the clammy and damp skin of a heat exhaustion patient. More severe symptoms of heat stroke can include seizures and a loss of consciousness. Avoid these hot weather threats by resting when the temperature gets near or over 100°F (38°C), especially with high humidity. And whether you're out in the heat or not, you'll need to stay hydrated. It's important to replace both the water and the electrolytes. This can be accomplished by drinking plain water and sipping the occasional sports drink. You can also drink plain water and eat a piece of fruit. You could even make your own rehydration drink with simple ingredients. Dump a handful of sugar and a pinch of salt into a gallon of water. Shake to dissolve, and drink freely.

"PEOPLE SAY CALIFORNIA IS NOTHING BUT SUMMER, BUT THEY'RE WRONG. CALIFORNIA HAS FOUR SEASONS: GREEN, BROWN, BRIGHT ORANGE, AND BLACK."

Our editor's Junior High School Math Teacher

236 STAND UP TO FIRE SEASON

Fire season is an artifact of the modern world, especially for those on the Left Coast. Often prompted by heat waves (and given a boost at times by bad actors), fires may burn for extended periods of time and they can pose a major threat to arid regions. As they roar onward, fought hard by a collective of brave firefighters, the fires leave a trail of destruction and displaced lives. While there's little that the average person can do to combat these ravenous fires that darken the sky, there is one simple piece of equipment

that can help. For anyone fleeing a fire-stricken area, our ability to breathe can be assisted by a mask or respirator rated for smoke. The same N95 masks that have become commonplace due to the COVID 19 pandemic are capable of filtering some smoke out of the air, but a purpose-built respirator is superior, though not always easy to come by. Smaller "half-mask" respirators and full face models use filter cartridges that can be selected for smoke or other undesirable substances.

237 ESTABLISH AN ESCAPE PLAN

It helps to be aware of the threat of wildfires in your area and to have a pre-established plan of action if your domicile catches fire, whether due to outside fire events or a kitchen mishap. At the risk of overstating it, this could be the most important survival plan that you and your family ever create.

PART 1 PREVENT Test your carbon monoxide and smoke detectors once a month by hitting the "test" button, and change the batteries every 6 months. Check your fire extinguishers monthly to make sure the gauge needle is "in the green" on the display. Have the extinguishers professionally tested according to the manufacturer's recommendation. You should also hold a seasonal refresher course of your family's knowledge on fire-escape safety, such as staying low, checking doors for heat before opening them, stop-drop-and-roll, and escaping in the dark.

PART 2 ESCAPE Design a fire escape plan that is known to all family members. The plan should include multiple escape possibilities from every room of the home if possible, an "official" meeting spot for your family, and a designated family member who will go to a neighbor's house to call for help. Consider purchasing an escape ladder for egress from multi-story homes. Once you have escaped, never re-enter a burning home for any reason.

PART 3 HANG IN THERE In the event that your home is lost or you have to flee your neighborhood, you'll need to be ready to carry on life while you are evacuated. It's no small task to rebuild your life after a catastrophic loss, but it is possible to start over again from the humble beginnings of temporary housing, motels, or even camps. This scenario is also one more reason you need a bug out bag and all the backup documentation to restart your life.

238 DON'T FORGET YOUR PETS

Some of the most heartwarming reunion tales in post-disaster areas are the unexpected, less-than-likely ones between pets and their long-lost owners. Unfortunately, there's a reason these are so touching—because they're surprising. Upheaval may separate you from a furry friend for good, but here are a few ways to make sure that you can find your way back to your little survivor.

DIGITAL ID TAGS A digital QR code can be updated more easily than an engraving. There are also collars with USB clips, so your pet is always carrying around a handy emergency flash drive with your info.

MICROCHIPPING Microchip implants are permanent, inexpensive, and very common, and shelters and veterinarians know to check for them. You can change the associated information if you move or your phone number changes—just call up the company to make sure it's up to date.

DUCT TAPE Yet another use for our favorite supply-kit item: If your pet has the old-fashioned tags, write your new information and where you are traveling on a strip of duct tape and attach it to the back of the tag.

239 STOCK A PBOB

Your pet's BOB isn't all that different from your own.

YOU'LL NEED

- PET FOOD IN AIRTIGHT CONTAINERS
- REGISTRATION, RABIES, AND VACCINATION RECORDS (VERY IMPORTANT FOR SHELTERS)
- NECESSARY PET MEDS
- WATER
- COLLAR WITH ID TAGS
- STURDY LEASH OR HARNESS
- TRAVEL CARRIER OR CRATE
- CAT LITTER AND BOX, DOGGY CLEAN-UP BAGGIES
- CLEANING AND DEODORIZING MATERIALS
- PHOTO IDS OF YOU AND YOUR PET
- FAMILIAR ITEMS (TOYS, BLANKETS)
- FIRST-AID SUPPLIES (AN EYEDROPPER AND SYRINGE ARE USEFUL FOR ADMINISTERING MEDS OR FLUSHING WOUNDS, AND HYDROGEN PEROXIDE WILL DISINFECT AS WELL AS INDUCE VOMITING IN CASE OF POISON INGESTION)

240 TRAIN FOR DISASTER

Training your pet is a very important part of an easy getaway and for keeping it out of harm's way. It's unsafe to let your pet roam loose when there may be hazards or disorienting scents nearby, so keep it leashed and do some crate training.

- Use an airline-approved crate, which most pet-friendly hotels also accept as standard.
- It should be large enough that your pet has 2–3 inches (5–8 cm) of clearance when standing up completely and enough room to turn around.
- When training, introduce the crate gradually. Position it somewhere your pet likes to be, and put a favorite toy inside.
- If your pet is hesitant, take apart the crate and remove the top and door. Allow your pet to go freely in and out of the open half until putting the top back on doesn't cause alarm.

241 LEARN ABOUT PET CARE

When your pet is injured or ill, and emergency conditions are preventing you from visiting the local veterinary clinic, your best friend will need your help. You'd better be prepared to give it.

SEEK CLASSES Many organizations offer low-cost training in pet first aid and related topics. You don't need to be an EMT or medical specialist to join in. These are classes for the general public, designed to show you exactly what to do for your pet in their time of need. Through these workshops and programs, you can learn to diagnose common ailments and problems in pets.

OFFER AID You'll also learn to render first aid to your furry, feathered, or scaly friends. Just a little bit of education can go a long way in a crisis. Don't let your busy schedule stand in the way; find your local educators and sign up today.

242 SPLINT YOUR PET

While it's universally recommended to take an injured animal to a vet, circumstances may require you to support your pet's movement temporarily.

STABILIZE WITH STICKS If you can determine that it's a minor injury, treat it as you would a sprain on a human limb. Wrap the injury, above and below, with an Ace bandage for stability and support. When the injury is more severe, bind the area with a bandage and a stiffener. A piece of a wooden ruler (or even a few well-padded sticks) can be incorporated into the wrappings to become a splint.

UPGRADE YOUR CARE For large animals, wrap a thick magazine around the area and bind it in place for a tubular splint. Then, as your situation improves, get your pet to the vet. Leaving a pet in a makeshift splint may prevent its injury from healing properly, causing more pain and suffering in the future.

243 KEEP THEM WARM

A utility failure can mean dangerously cold temperatures for us and our pets. One trick to help regulate their body temp is to play dress-up. Find appropriate sized clothing for children, teens, or adults, and see if you can get your pet to wear it. Whether they let you dress them or not, make a bed with a warm water bottle for them to curl up against. Also, give them extra food—their bodies can burn the extra calories for metabolic heat. When all else fails, or maybe earlier than that, you can curl up with your pet yourself for warmth.

244 DEVELOP ACCEPTANCE

While it's natural to resist an ugly revelation or frightening scenario, it's a mistake to surrender to the knee-jerk reaction of disbelief. When you're in a tough situation, you may just have to accept it. Acceptance doesn't mean that we like the circumstances around us or that we want them to continue. It simply means that we recognize their reality and understand that we can't change them right now. Acceptance can be very hard in grim situations. It can be even harder when a tragedy has occurred, but the sooner we can accept and process bitter realities, the sooner we can move forward.

THE PROBLEM Denial is a powerful opponent to acceptance. When we refuse to admit there is a problem, or deny the severity of our troubles, we're just kidding ourselves. And if we act on this false reality instead of what's really happening, we could end up making things worse.

"GOD, GRANT ME THE SERENITY TO ACCEPT THE THINGS I CANNOT CHANGE; THE COURAGE TO CHANGE THE THINGS I CAN; AND THE WISDOM TO KNOW THE DIFFERENCE."

The Serenity Prayer

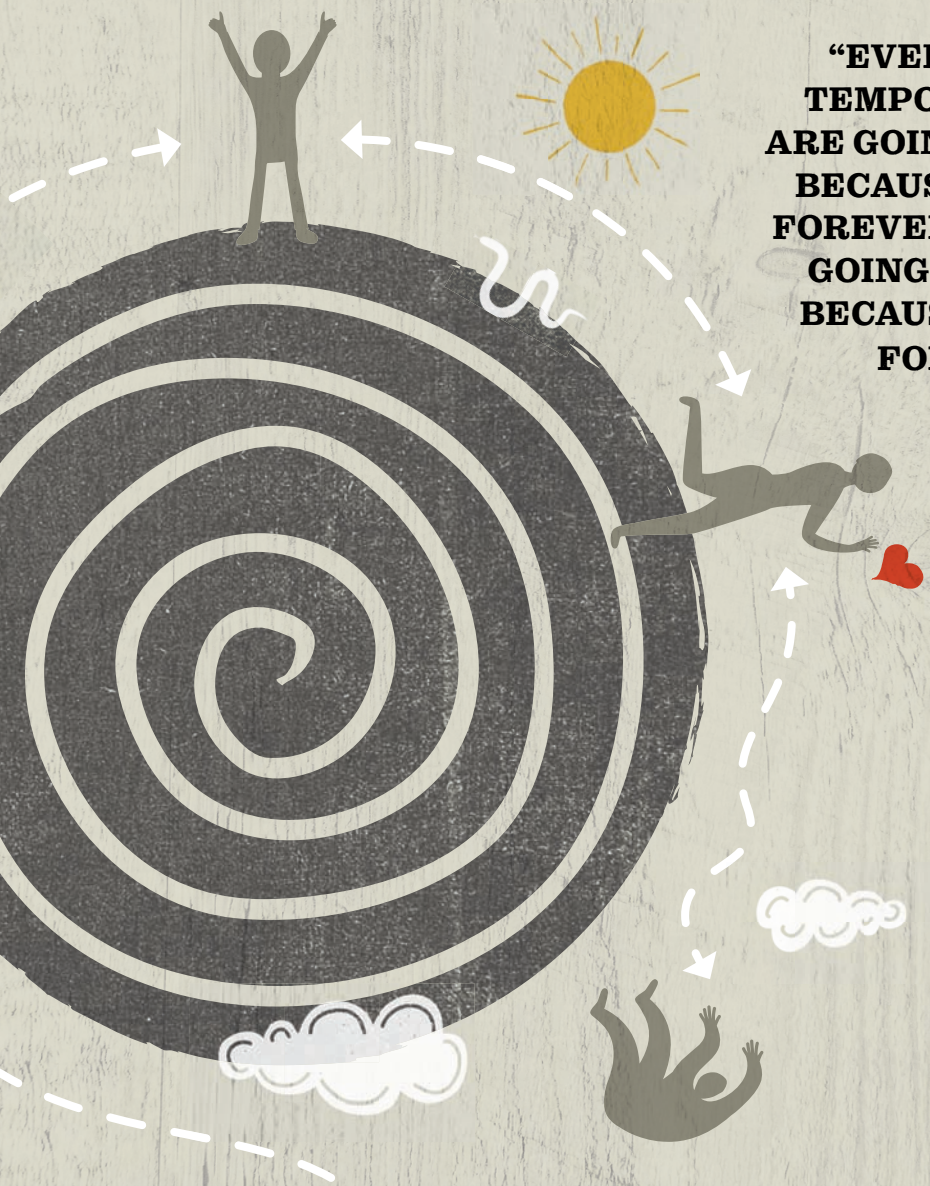
245 RIDE THE WHEEL OF FORTUNE

For those of you who have a little silver in your hair and aren't afraid of the Early Bird restaurant special (a thrifty meal eaten before the sun goes down), you might be wondering what an American game show has to do with a philosophy of survival. Well, let me be your own personal Vanna White and spell it out for you. Long before it was a multi-decade television phenomenon, the "wheel of fortune" was an idea that straddled both religion and philosophy.

The idea of the Fortuna's Wheel has roots stretching back to antiquity. One of its early references comes from Cicero, a Roman statesman, political theorist, and philosopher who lived over two thousand years ago. The *Carmina Burana* (a medieval masterpiece) also features the concept, as does Shakespeare's *Henry V* (the "slings and arrows of outrageous fortune"). The idea of the "wheel" is very simple, but it doesn't exactly fill us with warm and fuzzy feelings about the future. The Wheel of Fortune (also known as the Rota Fortunae) belongs to the Roman goddess Fortuna, and we are all represented on the wheel in different places. Known to be quite fickle, Fortuna spins her wheel randomly and we are all along for the ride. Some of us don't move much, while others may change position drastically on the wheel—suffering great loss and bad luck, or enjoying huge gains and good luck. In a later version of this concept, the vast wheel is always turning and we are all strapped to the outer rim. Some days, we are up in the sun and feeling like we are on top of the world. Other days, we are under the wheel being crushed down into the mud. The lesson here is simple. If we can hang on long enough when we're under the wheel, we'll come back up again. No matter how bad things get, don't give up. The wheel is turning. Sometimes it turns more slowly than we like, but remember that "change is the only constant in life" (the Greek philosopher Heraclitus said that 2,500 years ago). The tough times can't last forever.

THE REMEDY It takes hard work to accept an unhappy truth or a dire situation. You may be tempted to equate acceptance with surrender or apathy, but they aren't the same. You're not giving up or giving in, you're simply facing the facts. Acceptance doesn't mean that things are going to "stay bad" forever. It just means that you're being honest about the trouble you're in. My favorite example of acceptance comes from the book *Adrift* by Steven Callahan. He was alone on a raft in the Atlantic for over two months, and at a certain point, he accepted his fate. There was nothing he could do about being on the raft, so he accepted that "raft life" was his new life. This let him focus on surviving as he drifted. He covered 1,800 nautical miles (3,300 km) before he was rescued.

When you can't change your situation, sometimes the only thing you can do is accept it. This is easier said than done, especially when we are feeling overwhelmed or hopeless. We cannot control the things that are headed our way or change anything that has happened. We can work our way toward acceptance.



"EVERYTHING IN LIFE IS TEMPORARY. SO IF THINGS ARE GOING GOOD, ENJOY THEM BECAUSE THEY WON'T LAST FOREVER. AND IF THINGS ARE GOING BAD, DON'T WORRY, BECAUSE THEY CAN'T LAST FOREVER EITHER."

Unknown author

PUT IT TO WORK!

Take a moment to really enjoy and appreciate the things you have now. As we get older, life has a tendency to take away more things than it gives, so enjoy what you have while it lasts. If you happen to find yourself in a bad situation, take comfort from the impermanence of all situations. Work your way out from under the wheel and climb back up.

246 MAKE LOTS OF LIGHT

When an emergency arises after dark, you'd better have ample sources of light. Here are five modes of lighting that just might save you.

CHEMICAL LIGHTS These single-use lights can come in 30-minute high-intensity versions, long-lasting dim versions, and many colors. Their best attribute is that they pose no risk of fire whatsoever. You can get a brighter light by heating light sticks in hot water (though it shortens their "burn" time).

GREASE LAMPS Any type of lard or shortening can be combined with a plant fiber wick in a fire-proof vessel to create a grease lamp. Also called slush lights, fat lamps, gras lights (think Mardi Gras), and many other colorful names, these portable lamps are rooted in ancient history. Just don't spill it once the lard melts, or let the wind blow it out.

OIL LANTERNS These lights use fire and oil the way that a grease lamp does. But being enclosed in glass, they're less a fire hazard and more weatherproof. Oil lanterns can burn on kerosene, liquid paraffin, or lamp oil. They can also work on vegetable oils, but not as effectively. Never put gasoline, white gas, Coleman fuel, lighter fluid, alcohol, paint thinner, or similar low-flash point liquid fuels in the tank—it will blow up!

BATTERY LANTERN Looking like an old-school oil lantern, modern battery-powered lanterns eliminate the fire hazard and some provide extra features, like SOS strobes and energy saving modes.

SOLAR LIGHTS You can bring your cordless solar lawn lights indoors for evening illumination, or invest in a dedicated solar powered lighting source. Either way, these lights store up the sun's power during the day, and return it to you again at night for home lighting.

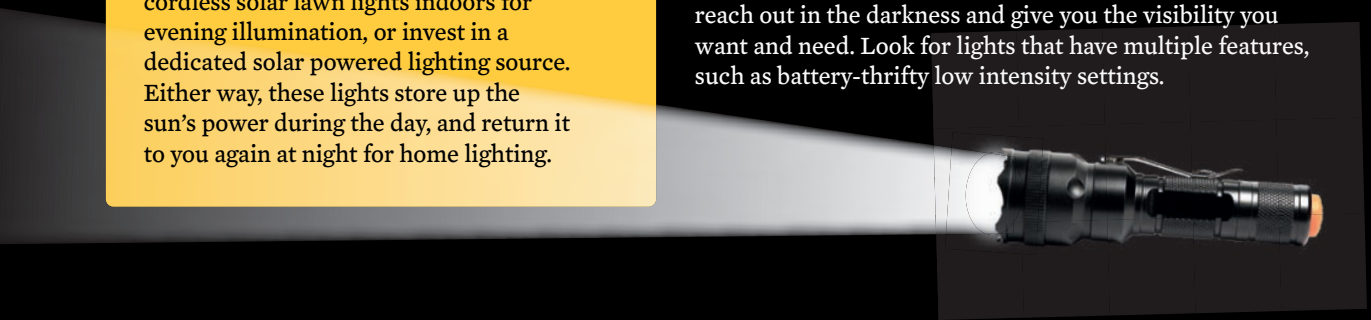
247 BRING BACKUPS

I'm a big believer in multiple flashlights and having the right light for each job. These are the three types of lighting that everyone should carry.

REGULAR FLASHLIGHT Bright beams, extended battery life, and rugged construction can be found through a variety of different models and across many brands. This handheld light is good for any number of situations.

HEAD LAMP My favorite for most tasks, a headlamp provides hands-free lighting, often with a long battery life. Head lamps are ready to stream illumination exactly where I'm looking, while keeping both of my hands free to work. You can even strap a headlamp onto a water jug or bottle for a DIY lantern.

TACTICAL LIGHT Nothing helps you out in those "bump in the night" situations like a high-lumen, ultra-bright tactical light. These lights can reach out in the darkness and give you the visibility you want and need. Look for lights that have multiple features, such as battery-thrifty low intensity settings.



248 MAKE POWER

Providing your own power makes a lot of sense for all kinds of reasons, but think about human nature and the kind of issues you might face in a disaster that goes on for some time.

STAY LOW-KEY A noisy generator, or solar panels on your roof, will provide you with power during an outage, but these items (and the fact that your house is lit up at night) will advertise that you have your own power source. If desperate people become more frantic, they'll wonder what else you have if you were prudent enough to have the equipment to make your own power.

MAKE YOUR CHOICE Determine whether it makes sense even to have power when your neighbors don't have it, and whether that power should come from a high profile source (like that loud generator) or something else. In my mind, low-profile is better than yelling "Hey, look what I've got!"

249 ADD AN OUTLET

Vehicle engines aren't meant to be electrical generators, but they can be. A trained professional can install an inverter (to turn your alternator's DC power into AC current) and place electrical outlets in your vehicle. These can be stationed in your car trunk or in the bed of a pickup, and they're capable of operating small appliances while the engine is running. This setup isn't recommended for long-term use and you'll need some gasoline to keep the vehicle running, but for short term power needs, it's one of the easiest generating systems to use. It's just like a receptacle in the wall, only this wall can drive around the town. Keep in mind that you are consuming a lot of fuel to charge your phone or run a blender, but this option for emergency power can add a little more peace of mind to your prepper planning.

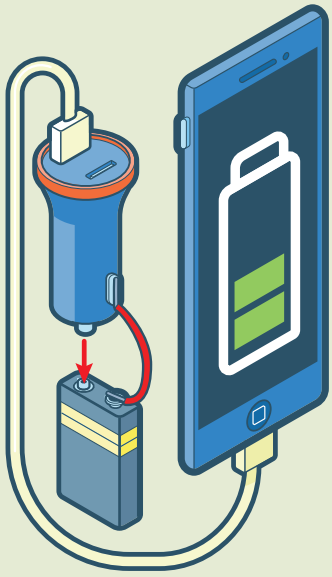
250 CHARGE A PHONE

One great product to buy (before the mayhem starts) is a battery-operated mobile phone charger. This can turn a few ordinary batteries into several full charges on your phone. But in the event that you didn't manage to pick one up, here's a quick solution.

STEP 1 Grab an ordinary plug-in phone charger designed to work in vehicles, some electrical tape, a 9-volt battery, and a bit of wire.

STEP 2 Strip both ends on a short piece of wire, and tape one bare end to the larger (female) terminal on the 9-volt.

STEP 3 Tape the other end to the side terminal of the car charger. Now touch the end terminal on the car charger to the smaller battery terminal (the male one), and plug in your phone. The car charger will step down the power from 9 volts to the amount needed for your phone and the charging will begin.



251 BE A SEED STEWARD

The ultimate way to be sustainable in your off-the-gird garden is to save vegetable seeds from one year to the next so that your supply is secure. This is best done when you are growing single varieties of each vegetable, avoiding unpredictable results from cross-pollination. Allow the veggies to mature completely, remove the seeds, and dry them for storage. An easy rule of thumb in seed storage is to add the temperature of the storage area in Fahrenheit to the humidity percentage. As an example, 60°F (16°C) added to 30 percent humidity will give you 90 points. The total of these two numbers should always be below 100 points. Lean toward the drier side in storage and your seeds will sleep happily for years. These steps should get you well on your way to being a seed saving savant.

KEEP THEM DRY Seeds go bad if they become damp. Use a watertight container and some desiccant packs to soak up the stray moisture in the seeds and packaging. These packs can be repurposed silica gel packs that are used in shoe packaging, vitamin bottles, and other retail applications.

KEEP THEM COOL Someplace cool is an ideal place to store your seeds for the long haul. Many folks use their refrigerator for this task. Just be careful when you take the seeds out of this cold storage, as they have a tendency to sweat a little.

KEEP THEM IN THE DARK Some seeds are light-sensitive, and will not last as long if they are exposed to bright light. Most storage methods for "dry and cool" will also keep them dark, but just to make sure, consider a container that will eliminate light as well as moisture.

252 DON'T THROW THAT OUT

Next time you're eating an orange or about to toss an apple core, think again. Why not save those seeds from your food, plant them, and grow your own vegetables and even trees? This could be merely for fun, to satisfy your curiosity, or as a cool project with kids. Or it could be for food production, even if you live in an apartment or other small space. Start off by picking winners. Fruits and vegetables that are fully ripe will usually have fully formed seeds inside. Avoid the hybrids. Play favorites by choosing things that say open-pollinated or heirloom in the description. You never know what you'll get when the hybridized DNA falls apart in the next generation of that plant. Finally, be patient. Most seeds respond well to a long and gentle drying process, and they sprout better after being fully dried. If you try to plant them too early, they may not sprout at all.

253 CHOOSE YOUR BATTLES

If you're starting out with seed saving, keep in mind that all seeds don't store equally. Some plants will produce seeds with a very high germination rate (nearly all of the seeds sprout under the right germination conditions), while others may not sprout as well. Start out by focusing on easy ones, and skipping the difficult seeds. Carrots, peppers, parsnips, okra, parsley, celery, Swiss chard, and New Zealand spinach regularly have low rates of germination, and it may not be worth the bother of trying to save them. But if you do decide to save these seeds, save extra amounts of them. This will make up for the ones that don't sprout. If you really want to make it easy on yourself, save the seeds of plants that have a high germination rate. Cucumber, squash relatives, lettuce, beans, peas, corn, and melons are all forgiving seeds to save.

TOP TIP

Strive for very stable temperature and humidity where your seeds are stored. This will help your seed stock keep a higher germination rate for a much longer period of time.

254 MAKE A FOOD CACHE

Have you ever thought about making a stash of food supplies at a remote site, a bug-out-location, or your off-grid homestead? It makes a great back-up plan to add to your food security. Whether you're trying to keep your supplies safe from critters or provisioning a remote outpost of your land, you don't have to bury your treasure to have it count as a cache. You could have your container stored virtually anywhere on site, so long as it is accessible in an emergency and hidden from view. You could even bury your cache outdoors. Just make sure that you can find it again later. Let one or two responsible family members know of the cache, just in case you don't make it.

Waterproof containers are the best choices for damp conditions, along with home-made vaults made out of PVC sewer pipe with caps glued in the ends. And for scenarios that aren't so damp, metal boxes are often a good choice, as they are impregnable to the gnawing teeth of rodents. Just remember that space is at a premium in a cache, especially a small one. Picking the right food is also a dicey selection process, as you are trying to balance calorie density, shelf life, and package size. Mountain House's line of Pro-Pak meals are the most space-saving options for freeze dried foods, and they are touted to last 25 years (in ideal storage conditions). Carefully packaged white rice, jars of honey, and many other grocery store items also fit the bill for nutrition and longevity.

One final point to consider with your food cache is the conditions under which you'd be using it. If times are tough enough that you are relying on your own food supply, you want that food assortment to be easy to prepare, without any strong odors, and able to provide complete nutrition for yourself and your family. You also want the food to be safe if your home is plundered. Consider dividing your food supply and storing it in different locations. Don't be shy about mislabeling your food bins, either. Looters may pass right by a food bin labeled "X-mas Keepsakes" underneath a stack of real holiday decorations in the back of the basement.

TOP TIP

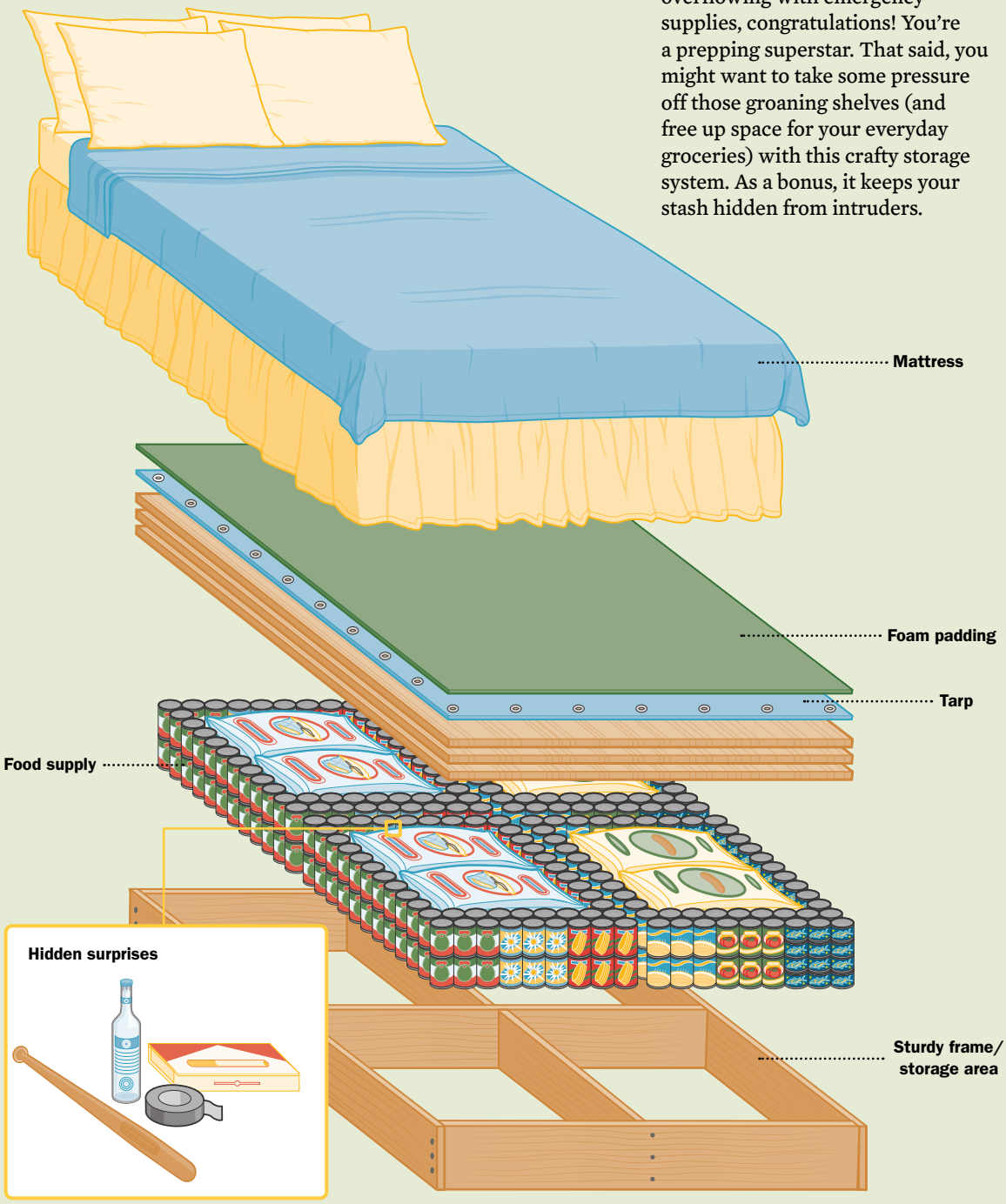
Don't store liquids and dry goods together in the same cache container, unless you like making mold farms. When the wet stuff leaks into the dry (and invariably it will), it will all be ruined.

255 STORE IN WALLS

Do you want to hide some food, supplies, and other stuff, but have only limited room to do so? Think about the empty spaces in your walls. Interior walls (between rooms) which are covered in drywall or paneling usually don't have much insulation inside, if any at all. These hollow spots can store quite a bit of food. Open up the wall, load in your stuff, and do your best repair job. Tell only those you trust the most about its location, such as your family or close friends.

256 SLEEP ON IT

If your pantry is literally overflowing with emergency supplies, congratulations! You're a prepping superstar. That said, you might want to take some pressure off those groaning shelves (and free up space for your everyday groceries) with this crafty storage system. As a bonus, it keeps your stash hidden from intruders.



257 MULTITASK YOUR MEDS

Let's start out by saying that this kind of playing doctor is a very bad idea. You should not be diagnosing yourself or others without proper training, and you should certainly not be messing around with drugs. However, it can be helpful to know how versatile some prescription meds are, if only so that you can discuss options with any medical professionals you encounter in the post-event landscape. A surprising number of drugs have multiple approved uses and/or are used "off label" in ways that are effective but not FDA-approved. Here's a small sampling.

MEDICATION	GENERIC NAME	APPROVED USES
ADDERALL	DEXTROAMPHETAMINE	ADD, NARCOLEPSY
CYMBALTA	DULOXETINE	DEPRESSION, DIABETES, ANXIETY, FIBROMYALGIA, NERVE PAIN, URINARY INCONTINENCE
DEPAKOTE	DIVALPROEX SODIUM	EPILEPSY, BIPOLAR DISORDER, MIGRAINES
EFFEXOR	VENLAFAXINE	DEPRESSION, ANXIETY, PANIC DISORDER
ENBREL	ETANERCEPT	RHEUMATOID ARTHRITIS, CHRONIC SPINAL PAIN, PSORIASIS
NEURONTIN	GABAPENTIN	EPILEPSY, PAIN FROM SHINGLES, RESTLESS LEG SYNDROME
PROPECIA	FINASTERIDE	FIGHTING BALDNESS

258 STOCKPILE THE ESSENTIALS

If you have a prescription that you need in order to survive, that's your number-one concern. But it's also wise to keep a stock of the following versatile and essential over-the-counter remedies.

IBUPROFEN (MOTRIN, ADVIL) This versatile anti-inflammatory can be used not just for headaches and cramps but also for earaches, sore throats, sinus pain, stiff neck, muscle strains, arthritis, gout, and back pain. It is effective at reducing fever and is generally safe for kids.

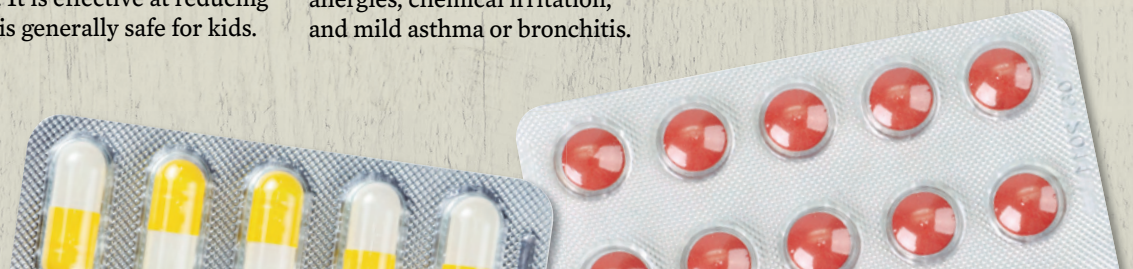
ACETAMINOPHEN (TYLENOL) Useful for the same conditions as ibuprofen, though generally less effective. High doses can cause liver damage, so be careful.

LOPERAMIDE (IMMODIUM) The best medicine for diarrhea, which can be deadly in a survival situation.

PSEUDOEPHEDRINE (SUDAFED) An anticongestant, this drug is used to treat respiratory infections, allergies, chemical irritation, and mild asthma or bronchitis.

MECLIZINE (DRAMAMINE) Relieves nausea, vomiting, motion sickness, and vertigo, and may work on anxiety. Can also be a safe sleep aid.

DIPHENHYDRAMINE (BENADRYL) Mainly used for sniffles caused by allergies or respiratory infections, it can also treat rashes (including poison oak or ivy), hives, and nausea. It makes many people very drowsy and can be used as a safe sleep aid.



OFF-LABEL USES

DEPRESSION, OBESITY, APHASIA, OCD
CHRONIC KNEE AND BACK PAIN, SMOKING CESSATION
BORDERLINE PERSONALITY DISORDER, PTSD, OCD, ALCOHOLISM, ANXIETY, COCAINE ADDICTION, SLEEP DISORDERS, SCHIZOPHRENIA, ALZHEIMER'S
BIPOLAR DISORDER, HOT FLASHES DUE TO CANCER THERAPY, MIGRAINE PREVENTION, CHRONIC FATIGUE, TENSION HEADACHES, ADD, FIBROMYALGIA, ANOREXIA NERVOSA, OSTEOARTHRITIS, BINGE EATING
INVESTIGATED FOR USE IN ALZHEIMER'S AND VASCULITIS, AMONG OTHER CONDITIONS
NEUROPATHIC PAIN, HIV/AIDS–RELATED NEUROPATHY, PHANTOM LIMB PAIN, ANXIETY, BIPOLAR DISORDER, MIGRAINES, DEPRESSION, PTSD, SLEEP DISORDERS, MULTIPLE SCLEROSIS, CHRONIC FATIGUE, MENOPAUSAL SYMPTOMS, COCAINE ABUSE
PREVENTING PROSTATE CANCER

RANITIDINE (ZANTAC) Mainly used to treat heartburn, ulcers, and other stomach issues, it can also relieve hives.

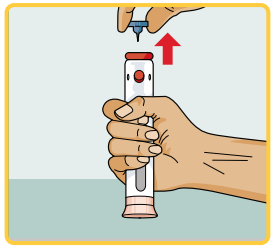
HYDROCORTISONE CREAM The strongest steroid cream available without a prescription can treat painful or itchy rashes such as eczema, poison ivy, diaper rash, and minor genital irritations.

CLOTRIMAZOLE (GYNE–LOTRIMIN) This antifungal can treat athlete's foot, ringworm, and diaper rashes.

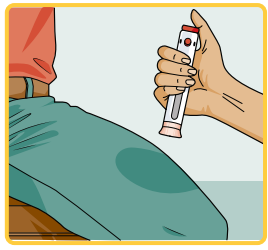
259 USE AN EPIPEN

Anaphylaxis is a rare type of severe allergic reaction that can be triggered by anything from certain foods to insect stings. Milder reactions can be unpleasant and sometimes a little harmful to the victim, but anaphylactic shock can be lethal if untreated. The allergic reaction can take place within minutes, with the victim experiencing severe swelling and rashes, difficulty breathing, and dangerous changes in blood pressure and heart rate.

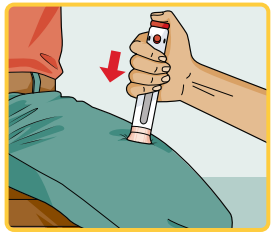
If you know a person is experiencing this sort of reaction, it can be countered with epinephrine (the same stuff as adrenaline) administered by a pen-shaped auto-injector. If you stock a few in your medical kit, make sure they're kept in a stable-temperature environment and are within their expiration date.



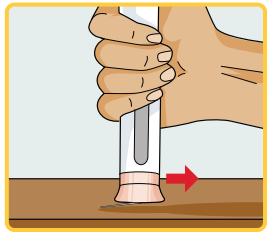
STEP 1 Remove the cap from the end of the injector.



STEP 2 Grip the shaft firmly in your hand, with your thumb on its back, and aim for the victim's thigh muscle. (You can even use the pen through a layer of clothing.)



STEP 3 Jab down firmly against the muscle, keeping the shaft of the pen perpendicular to his or her limb. Hold the injector in place for at least 10 seconds to allow the needle to deploy and the medicine to be administered.



STEP 4 Remove the needle from the victim's thigh, and carefully dispose of the injector and/or bend the tip to avoid being stuck with it.

STEP 5 Monitor the victim's condition and get him or her to skilled medical treatment.

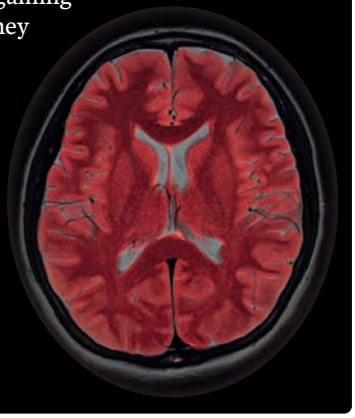
260 HELP A SEIZURE VICTIM

Seizures result from abnormal electrical activity in the brain caused by fever, injury, stroke, brain tumors, or certain medications. Seizures occurring on a regular basis are a condition called epilepsy. There are several types of seizures, but tonic-clonic seizures are one of the most significant. The person may go rigid, fall down, and then convulse for a minute or two. Their breathing may also be affected and they may go pale or blue, particularly around the mouth. They may also lose bladder or bowel control.

This can be frightening to see, but isn't often a medical emergency. Once the convulsions have ended, the person usually recovers slowly. They may appear "spaced out" or unable to easily answer questions for some time after the seizure ends.

If possible, ease the seizing person to the floor. Protect them from injury by moving any hard or sharp objects and put a soft, flat item, such as a pillow, under their head. Make note of how long the seizures last; report the information to medical responders. Place the victim in the recovery position (see item 247) once the seizure is over, and stay with them until recovery is complete. Be calmly reassuring throughout. Do not restrain the person or try to move them unless they are in danger, and do not place anything in their mouth or give them anything to eat or drink until they are fully recovered.

Call an ambulance if the seizure lasts more than a few minutes or they have another seizure without regaining consciousness; if they are injured, have trouble breathing, or become aggressive after the seizure; or if they have other health conditions such as diabetes, heart disease, or are pregnant.



261 HELP A VICTIM RECOVER

If a sick or injured person is unconscious but is breathing and has no other life-threatening conditions or spinal injuries, they should be placed in the recovery position. Putting someone in the recovery position will ensure their airway remains clear and open. It also prevents vomit or other body fluids from being inhaled or causing choking, both of which can be life-threatening.

STEP 1 Kneel on the floor on one side of the person.

STEP 2 Place the arm nearest you at a right angle to their body with their hand up above their head.

STEP 3 Tuck the victim's other hand under the side of their head, so that the back of their hand is touching their cheek.

STEP 4 Bend and lift the knee farthest from you to a right angle.

STEP 5 Carefully roll the person toward you onto their side by pulling on the bent knee and their shoulder.

STEP 6 Once on their side, tuck the bent knee up toward their hips to keep them stable on their side.

STEP 7 Open the person's airway by doing a head tilt/chin lift maneuver, gently tilting their head back and lifting their chin. Check that nothing is blocking their airway. Stay with the person and monitor their breathing and pulse until help arrives. Reassure the patient while you wait.

262 DEAL WITH A GUNSHOT WOUND

The severity of gunshot wounds varies due to a number of factors, including where the victim is hit, the caliber of the weapon, and the type of bullet used. Unless you're in the most dire circumstances in a remote location without hope for rescue, this is not the time to try your hand at any invasive procedures. Get some help. While you're waiting for assistance to arrive there are things you can do to help stabilize the unlucky soul who has been shot.

First check the victim's ABCs (see item 68). If they are not breathing or don't have a pulse, start CPR (see item 69). If they are breathing and have a pulse, it's time to control the bleeding. Look for both entrance and exit wounds, and bandage each of them, starting with the most severe one first. If you only find an entrance wound, the bullet is still in the body. Leave it alone even if you happen to feel it underneath the skin. If you're dealing with a shotgun injury, there will be numerous individual wounds to treat. There is really nothing to be gained by plucking out the shot, as disturbing the projectiles might cause more serious bleeding or other damage. And if your tools aren't sterile, you might also introduce infection. So keep it simple: Stop the bleeding, dress the wound, and let the professionals remove the bullets or shot once the victim is safely at the hospital.

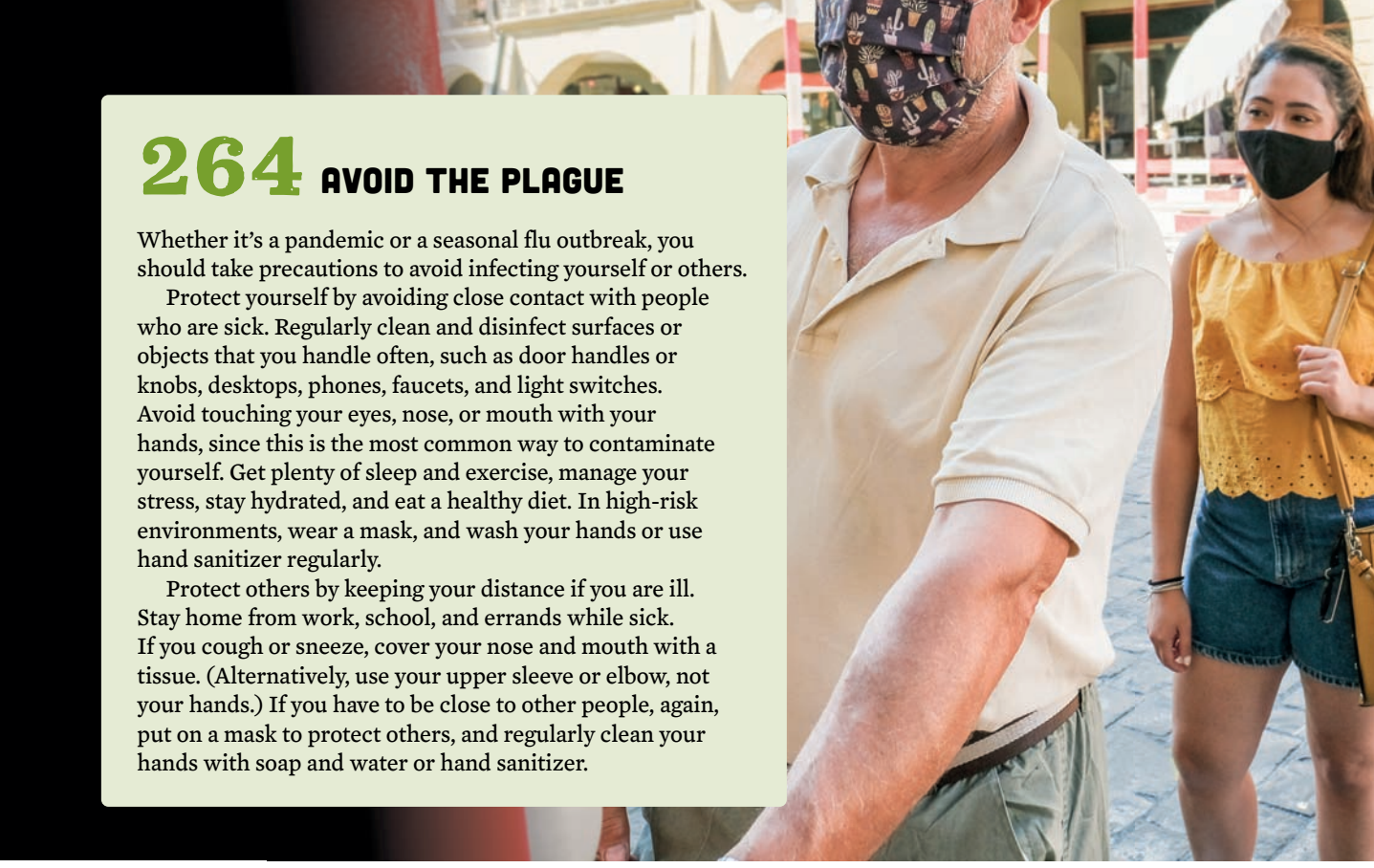
263 BE GUN SAFETY SAVVY

You should know how to safely handle and care for your firearms. If you have a gun, be sure to invest in a way to take care of it and store it, and definitely know how to use it.

A basic gun-cleaning kit usually consists of a set of brushes, cloths, and solvents that are used to remove gunk that sticks to the interior of your gun's barrel and other workings after use—copper fouling from bullet jackets, burnt propellant, etc. Over time, a buildup of these substances can make a firearm not only difficult to use but unsafe. Keep it clean and in working order and your gun will remain with you for years to come.

When not in use, your firearms should be placed somewhere safe and secured, and out of reach of others, especially children. Invest in a gun safe or, at least, a lock that obstructs the action, magazine, or trigger to keep it from being loaded and fired. Keep your gun unloaded and your ammunition stored separately when not in use.

Last, remember the basic tenets of safe gun handling: Always assume a gun is loaded. Always point the gun in the safest direction possible when not in use. Always be aware of what's beyond your target. And always keep your finger off the trigger unless you are ready to fire. If you're interested in additional training, there are various classes from gun basics up to self-defense and combat courses.



264 AVOID THE PLAGUE

Whether it's a pandemic or a seasonal flu outbreak, you should take precautions to avoid infecting yourself or others.

Protect yourself by avoiding close contact with people who are sick. Regularly clean and disinfect surfaces or objects that you handle often, such as door handles or knobs, desktops, phones, faucets, and light switches. Avoid touching your eyes, nose, or mouth with your hands, since this is the most common way to contaminate yourself. Get plenty of sleep and exercise, manage your stress, stay hydrated, and eat a healthy diet. In high-risk environments, wear a mask, and wash your hands or use hand sanitizer regularly.

Protect others by keeping your distance if you are ill. Stay home from work, school, and errands while sick. If you cough or sneeze, cover your nose and mouth with a tissue. (Alternatively, use your upper sleeve or elbow, not your hands.) If you have to be close to other people, again, put on a mask to protect others, and regularly clean your hands with soap and water or hand sanitizer.

265 WASH UP

It turns out your mom was right. Washing your hands does make a big difference in preventing getting sick or infecting others. Surprisingly, studies have found that even professionals in the medical field don't wash their hands properly, so take a moment to read how do it right.

STEP 1 Wet your hands with clean, running water (warm or cold), turn off the tap, and apply soap.

STEP 2 Rub hands together vigorously to scrub all surfaces, including the backs of your hands, between your fingers, and under your nails.

STEP 3 Continue for at least 20 seconds—it takes that long for the soap and scrubbing action to properly clean your hands. Want an easy way to time yourself? Imagine singing "Happy Birthday" twice.

STEP 4 Rinse your hands under running water.

STEP 5 Dry your hands using a paper towel. Physically drying your hands helps remove bacteria.

STEP 6 If you are in a high-risk area, use your paper towel to turn off the faucet and open the bathroom door.

267 DON A MASK CORRECTLY

If you have the opportunity to be fit tested for a mask, do so in order to learn how to properly size and don an N95 mask. Additionally, training will include valuable information on the limitations and benefits of N95 masks. Here's how to correctly place a mask on your face for a proper seal.

STEP 1 Inspect for damage and contamination. Examine the straps and nosepiece of the mask to verify that they are in good condition.

STEP 2 Hold the mask in one hand, with the nosepiece at the fingertips, and let the head straps hang loosely in front of the respirator.

STEP 3 Hold the mask in place while pulling the top strap over your head, resting it above your ears on the back of your head. Then pull the bottom strap over your head and place it around the back of your neck, below your ears.

STEP 4 Using both hands, mold the nosepiece to your nose by pushing inward with your fingertips.

STEP 5 Cover the mask completely with both hands and exhale sharply to check for positive pressure. If air blows on your face or eyes, adjust the mask or try a different size. If your mask doesn't have a proper seal, it isn't protecting you.

STEP 6 Inhale sharply to test the negative pressure seal. The mask should press against your face firmly. If air leaks in from the edges, readjust the mask or try a different size or model. Again, a proper seal is needed to keep you protected.

266 PACK EXTRA PANDEMIC SUPPLIES

Your emergency kits should already include these items, but if you're concerned about pandemics, or the news reports an increased risk, consider buying extras.

HAND SANITIZER

N95 RESPIRATORS

MEDICAL GLOVES

If the pandemic risk is very high, consider using additional protection.

SAFETY GOGGLES

DISPOSABLE TYVEK JUMPSUITS

268 IMPROVE YOUR SHELTER-IN-PLACE PLAN

Whether it's from a pandemic lockdown, a toxic spill, or a local wildfire, "sheltering in place" is a survival skill that is now well-known to many. Along with the basic knowledge and preparedness from previous sections (including a SIP kit), there are plenty of other things that we can do to improve our shelter-in-place setup. One easy way to think of these upgrades is as function and fit. You may have a shelter that serves its basic function (keeping you out of the elements and away from threats), but the "fit" could always be better. Aesthetics and comforts shouldn't ever take precedent over practical safety, but we can't ignore the softer aspects either because they may be the very things that get you through the crisis with your sanity intact. Stock up some supplies for crafts that you've always wanted to try. In addition to that and some entertainment options, you can also plan ahead for projects and tasks that would be helpful during a "lockdown" scenario. In an event that would cause you to shelter-in-place for weeks (or longer), you would be likely to have abundant free time and a legitimate need for self-reliant activities. You could stock up on lumber and screws for carpentry projects or buy the seeds to grow your very first garden. These pastimes can gobble up a LOT of time, but most people are time-rich when sheltering in place. You'll just need to have the raw materials in place in advance.

269 HELP UNEXPECTED GUESTS

There's an ancient law that many of our forebears once observed—"be kind to strangers as you never know when you might be one." On the surface, this adage seems to be about hospitality, but it's more than just a restating of the "Golden Rule." It's a way to build relationships and community, as well as a way to prevent the creation of new enemies.

Most humans are gregarious creatures, craving the company and companionship of other humans. We are community-oriented entities, except for the occasional hermit or two. So even if we are sheltering in place during a pandemic or other disaster, just imagine how frightened your fellow humans may be when they are caught without a place of refuge. While many of us will be unable to take in "refugees" during a crisis, others among us may have ample room and bountiful supplies. Like all things, there is some amount of risk involved. Taking casual acquaintances and random people into your home might be too hazardous, especially if there is a contagion involved in the crisis. But it's far more likely that strangers in need might just be the neighbors you've never met, rather than roving gangs of bandits from a post-apocalyptic wasteland.

You don't have to give up your own bed or hand over the keys to your house, but you could consider letting your guests "quarantine" in your shed, garage, or basement. You could provide them with fresh water and simple meals, and even help them find a more suitable place to go. Draw up ground rules, letting them know that their free ride is over if they do anything that makes you feel unsafe, or if the situation changes and helping them becomes too dangerous.

270 DRESS FOR THE OCCASION

Your extended survival kit should include practical, sturdy clothing for a range of conditions. Remember that, within reason, you get what you pay for, and when clothing will have to stand up well to the elements and maybe last a good long while, it's worth an investment. That said, smart shoppers will find much of what they need at big box or surplus stores. If you do winter sports and/or a lot of camping, you may already have a number of these items. Just be sure they're easily accessible when you need them. These are some absolute basics.

MOISTURE-WICKING LONG-SLEEVE TOP

HIGH-COLLARED BUTTON-UP WOOL SHIRT

COMFORTABLE UNDERWEAR

Women should consider wearing well-constructed sports bras as a basic undergarment, as they can be more comfortable for long-term wearing, as well as more versatile.

WOOL-BASED LONG JOHN BOTTOMS

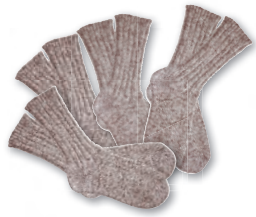
COLD-WEATHER GLOVES

WORK GLOVES

271 GET WILD & WOOLLY

You'll note that a lot of the "must-have" clothing for survival is wool. There's a reason for this—wool is soft, breathable, resists odor, dries quickly (and keeps you warm even when it's wet), is resistant to fire, and offers some good UV protection. Unless you're allergic to it, wool is one of the more comfortable fabrics. In the old days, trappers wore their wool undies for months at a time and, while that's really not recommended, there aren't many fabrics that would stay comfy and (relatively) fresh under those conditions.

Look for pure merino wool for long-lasting and comfortable clothing. It's not going to be cheap, but given the benefits and how long wool clothing lasts, it's almost certainly worth the investment.



WOOL SOCKS

These chafe less and have some natural waterproofing. Pack more socks than you think you'll need.

STURDY JEANS

LONG-SLEEVE WOOL TOP

INSULATED WATERPROOF JACKET

TOP TIP

Use superconcentrated washing soap and a small brush to help get stains out when hand-washing. Keep repair items such as a sewing kit (including awl for heavy-duty repairs), zipper-repair tools, shoe-repair glue, and heel savers for shoes.

KNIT HAT WITH RAIN VISOR

WATERPROOF SHOES OR BOOTS

RAIN PONCHO

BALACLAVA OR WATERPROOF FACE MASK

SHATTERPROOF SUNGLASSES

SEVERAL BANDANAS
Good for dust masks and head coverings, they can be soaked in water and tied around neck to cool down, and more.

272 WALK TALL

Any emergency situation almost certainly involves some walking, whether you're hiking out of the wilderness, crossing a storm-devastated cityscape, or fleeing civil unrest (or hordes of zombies). That means you need good shoes. Don't go cheap—buy a sturdy, comfy pair of hiking or combat-type boots (real combat, not club fashion!). Break them in well and take care of them. High-tech synthetic material is lighter and easier to break in but won't last as long. Real leather takes more work but, cared for properly, can last forever.

273 BUY THE BEST VEHICLE

The next time you're in the market for a new vehicle, you may want to give some thought to the worst conditions you may face behind the wheel of your new ride. Consider some emergency extras and a few nice upgrades to turn your mild-mannered auto into a mayhem-proof battle wagon.

274 UPGRADE YOUR RIDE

Some vehicle upgrades serve a variety of situations, while others are very specific. Here are a few to consider.

BRUSH BAR These bars are mounted to the vehicle's frame and protect the vehicle in a front collision. The brush bar can also push vegetation and debris out of the way for off-road driving.

SNORKEL AIR INTAKE Driving through flood waters and rivers is incredibly dangerous, but it's possible with a raised air intake for your engine. Ideally, many vehicle systems should be waterproofed, but the mandatory item for driving through water is the snorkel.

ELECTRIC WINCH Pull yourself out of a jam with a sturdy electric winch. These are typically mounted on front brush bars and allow you to pull yourself (or another vehicle/object) out of a hole.

HIGH-FLOTATION TIRES Wider, higher-flotation tires make a big difference in off-road driving. These offer enhanced traction in loose sand, deep mud, and snow.

TOW HOOKS These hooks are attached to the vehicle frame and are a big help—whether you're the one towing or the one getting towed.

HIGH-CAPACITY FUEL TANK This option may only be available as an aftermarket part, but larger fuel tanks can certainly be an option in many vehicles. Upsize your 15-gallon (57-l) gas tank with a generous 20-gallon (76-l) tank, or even a beefy 25-gallon (95-l).

SUV These vehicles have lots of features that allow you to drive far off the blacktop. Find a full-size, full-frame model with four-wheel drive; avoid small/medium SUVs. Get one with a two-speed transfer case, which allows you to run in two high, four high, and four low gear options to enhance traction depending on weather/terrain.

VAN It's very hard to beat the covered cargo room and passenger numbers you can carry in a van. You can carry the whole family and a good amount of gear in a standard minivan while getting reasonable gas mileage. If you have a lot of gear and people to haul through bad weather or crowded streets, the van could be your best option.

HEAVY TRUCK The horsepower, high ground clearance, and tow capacity of a heavy truck make it a top choice for driving in bad conditions and off road. This truck can tow twice the weight that a full SUV can pull (20,000 lbs/9 metric tons). Four-wheel-drive heavy trucks also come with a two-speed transfer case as standard for many driving conditions.

275 CHARGE IT YOURSELF

To be as self-reliant as possible, consider carrying a portable battery jump-starter in your vehicle. These battery packs can deliver 400 to 1,700 amps of engine-cranking power and have integrated jumper cables to connect directly to your failed vehicle battery, with no friendly neighbor necessary. Some models include additional features, such as air compressors, battery-power-level gauges, built-in lights to illuminate your work area, and 12-volt DC charging sockets that can power and recharge important electronic devices, such as cell phones.

276 PROVIDE ALL THE AIR

A portable air compressor is a very handy piece of machinery that lets you properly refill a flat tire during emergencies. This easy-to-use device plugs into your car's cigarette lighter or 12-volt power outlet and is capable of inflating the tires of cars, SUVs, and light trucks. A 12-volt motor provides good air compressing power, but they may take several minutes to fully inflate larger tires. Depending on the device, extras can include an in-line tire pressure gauge, long air hoses, and various nozzles to inflate rafts, air mattresses, and other items.

277 UNDERSTAND YOUR FUEL TYPES

You'll probably want to have a range of fuel options on hand, depending on your needs and what sort of emergency you feel is most likely to happen in your region. This chart gives you a starting point for considering your needs and making decisions.

	FUEL	USES		
		COOKING	HEATING	LIGHTING
SOLIDS	WOOD	●	●	●
SOLIDS	COAL	●	●	
SOLIDS	CHARCOAL	●	●	
LIQUIDS	GASOLINE			
LIQUIDS	DIESEL			
LIQUIDS	KEROSENE	●	●	●
LIQUIDS	OIL	●	●	●
GASES	NATURAL GAS/ PROPANE/ BUTANE	●	●	●
		COOKING	HEATING	LIGHTING

278 BURN THIS NOT THAT

Some fuels can be swapped should you run out of one but have another. Others aren't so versatile or may even be explosive if substituted. If you do have fuel on hand in a crisis, be sure you use it safely.

DIESEL AND HEATING OIL These two fuels are good substitutes for each other. Diesel burns a little more cleanly than home heating oil, but either of these can burn in a diesel vehicle or your home furnace.

LANTERN FUEL Anything other than kerosene or liquid paraffin in an old-fashioned, wick-based lantern is not an option. Diesel, white gas, alcohol, or other fuels can lead to an explosion. Pressurized lanterns should only be filled with white gas (naphtha).

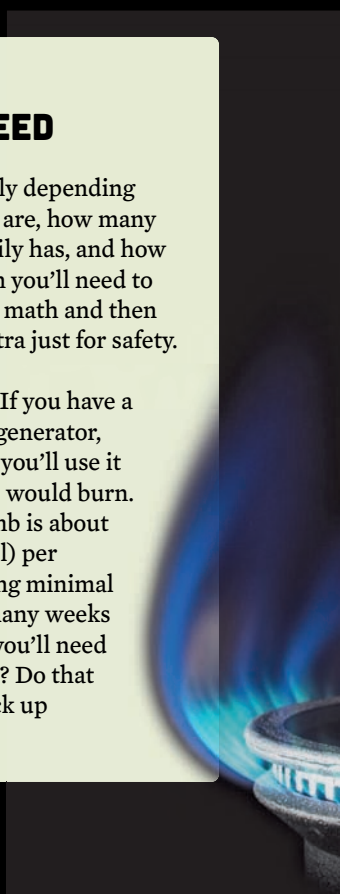
ALCOHOL Pure alcohol in the form of high-proof (anhydrous) ethanol or methanol can be added to gasoline to stretch your vehicle fuel supply, but keep the alcohol percentage low—somewhere around 25 percent of the total fuel volume. If you use too much alcohol, the engine will run very poorly.

279 DETERMINE HOW MUCH FUEL YOU NEED

There's a school of thought that says you can never stockpile too much fuel. While there's something to that, your space and resources are limited, so you need to do a little figuring and make the right decision for your circumstances. Here are the rock-bottom basics.

BUGGING OUT If you need to leave fast, and gas stations are unlikely to be open, figure out how much gas or diesel you'll need to fill your tank and to refuel on your way to wherever you imagine will be your destination. That will vary wildly depending on where you are, how many cars your family has, and how far you reckon you'll need to drive. Do that math and then add a little extra just for safety.

STAYING PUT If you have a gas-powered generator, estimate how you'll use it and what that would burn. A rule of thumb is about 15 gallons (57 l) per week, assuming minimal usage. How many weeks do you think you'll need to prepare for? Do that math and stock up accordingly.



		STORAGE	PROS	CONS
ELECTRICITY (GENERATORS)	VEHICLES	DRY STORAGE (BINS, BAGS)	• DURABLE (IF KEPT DRY) • USABLE IN- AND OUTDOORS (CAMPFIRES, STOVES, FIREPLACES, ETC.)	• CHARCOAL CAN ONLY BE USED TO COOK OUTDOORS • CAN BE HEAVY • BULKY, REQUIRES A LOT OF STORAGE SPACE • WILL NOT BURN IF WET • WOOD CAN ROT
●	●	PLASTIC OR METAL CANISTERS/ JUGS	• PORTABLE • VERSATILE (SOME STOVES, LAMPS, GENERATORS, ETC. WILL ACCEPT MULTIPLE LIQUID FUELS)	• SOME LIQUID FUELS CAN DEGRADE OVER TIME (UNUSABLE FOR VEHICLES) OR EVAPORATE/LEAK • VAPORS ARE FLAMMABLE
●		PRESSURIZED BOTTLES/ TANKS	• MOST VERSATILE FUEL TYPE	• SEALED BOTTLES OR TANKS REQUIRE REFILLS • CAN BE PUNCTURED • PORTABLE ONLY IN SMALL TO MODERATE AMOUNTS
ELECTRICITY (GENERATORS)	VEHICLES			

280 STORE FUEL RIGHT

No matter how much liquid fuel you're planning to stockpile, certain considerations remain the same. You're dealing with a combustible, poisonous material, so you should apply a few extra measures of caution.

CONTAINERS Even the fumes are combustible, so liquid fuel should be stored in airtight containers that do not vent. You should be able to walk into the area where your fuel is stored and smell nothing. If that's not the case, either fumes or liquid are leaking, and you need to fix that fast. Store your fuel in approved plastic or metal containers, and check them frequently.

LOCATION Don't store fuel in your basement or even in your garage if you can help it. The ideal spot is a storage shed on your property located at least 30 feet (9 m) from your home (this is true for firewood as well). In the event of a house fire, you don't want to add any more combustibles to the mix. Some recommend underground tanks, but this is illegal in many places and a serious risk to the quality of your groundwater. Don't risk it. If you want to stockpile fuel in bulk, you can purchase above-ground storage drums.

TEMPERATURE As with food storage, you want your fuel kept somewhere clean, dark, and as cold as possible. Direct light and higher temperatures can degrade fuel's quality quickly and, in a worst-case scenario, pose a fire risk as well.

281 PROTECT IMPORTANT DOCUMENTS

There are plenty of personal documents that, if they get lost, can cause problems and a lot of hassle to replace. It's helpful to keep electronic copies in cloud storage, but in the case of some important documents, you'll need originals. Investing in a fireproof, waterproof document safe is an excellent way to protect those papers in the event of a disaster. Since you should keep your previous year's taxes in this collection, you can review and update all documents when you file your taxes. Here is list of recommended documents for you to review and consider.

IDENTITY

DRIVER'S LICENSE · OTHER PHOTO ID, INCLUDING MILITARY · BIRTH CERTIFICATE(S) · SOCIAL SECURITY CARD(S) · PASSPORT(S) AND GREEN CARD(S) · NATURALIZATION DOCUMENTS · CHILD IDENTITY CARDS/DENTAL RECORDS/DNA SWABS

FAMILY

ADOPTION PAPERS · CHILD CUSTODY DOCUMENTS · MARRIAGE LICENSE · DIVORCE LICENSE

PETS

PROOF OF PET OWNERSHIP AND REGISTRATION PAPERS · PET MICROCHIP INFORMATION

INSURANCE POLICIES

PROPERTY/HOMEOWNER'S/RENTER'S INSURANCE (INCLUDING RIDERS) · AUTO INSURANCE · LIFE INSURANCE

OTHER

MILITARY DISCHARGE RECORD (DD FORM 214)

282 AUTOMATE YOUR CASH FLOW

Paying your bills can be a hassle even under conventional circumstances, but in a disaster it might be impossible. The same will go for trying to deposit a check from your employer. The postal service might not even deliver mail. All this means that important bills and hard-earned pay may not be getting taken care of. If your employer offers it, enroll in a direct deposit program to remove the hassle of lost checks. Also, consider using your bank's bill pay system to automatically handle all of your bills, including your mortgage, car payments, and credit card minimum payments, so that, in an emergency, you won't also have to deal with worrying about your credit score.

283 BACK UP YOUR DOCUMENTATION

The more backups you keep of your important documents, the greater the chance that at least one copy will survive a disaster scenario. There are many ways to store backups, each with advantages and disadvantages. The simplest option, and the one that leaves you the most control over the documents, is to secure them in your home, ideally in a fireproof safe. You could also store copies off-site with trusted friends or relatives (especially ones whose homes you might evacuate to) or in a safe-deposit box at a bank (which costs a periodic fee but provides professional-grade security). If your home doesn't survive the disaster, these remote backups might. A third option is to scan documents into your computer and store them on a hard drive, USB stick, or in cloud storage (which is essentially storing them on someone else's hard drive, the digital equivalent of a safe-deposit box). Be sure to secure your backup drives just as well as physical copies, and consider encrypting the files to prevent unauthorized users from opening them.

FINANCES

FINANCIAL ACCOUNTS (CHECKING, SAVINGS, CDS) · HOME EQUITY LINE OF CREDIT · LOANS, INCLUDING STUDENT AND CAR · CREDIT CARD ACCOUNTS · RETIREMENT ACCOUNTS (401K, IRA) INVESTMENT ACCOUNTS (STOCKS, BONDS, MUTUAL FUNDS) · PREVIOUS YEAR'S TAX RETURNS (FEDERAL, STATE, AND LOCAL)

HOME

LEASE OR RENTAL AGREEMENT · MORTGAGE OR REAL ESTATE DEEDS OF TRUST · PROFESSIONAL APPRAISALS OF PERSONAL PROPERTY · PROPERTY TAX STATEMENT

LEGAL

WILLS AND TRUSTS · POWER(S) OF ATTORNEY

HEALTH

RECORD OF IMMUNIZATIONS · LIVING WILL OR DO NOT RESUSCITATE ORDERS

VEHICLE REGISTRATION AND TITLE

284 KEEP IT (FIRE) SAFE

We've mentioned the use of fire safes previously, but let's take a moment to delve deeper into the topic. Firstly, I'm a big believer in these heavily armored boxes. I've kept vital documents, paper money, and irreplaceable treasures in a fire safe for many years. These sturdy boxes are typically constructed of steel, with two to four layers of fireproof gypsum inside the safe walls for insulation. There are numerous brands and styles on the market, some with keys to open the door and others with combination locks. If possible, choose a fire safe product with a UL or ETL tested fire rating. These are two companies that provide reputable and independent product testing. An ETL fire rating of 90 minutes, for example, would keep the safe's contents below 350°F (180°C) for 90 minutes, while withstanding exterior temperatures up to 1,850°F (1,000°C). While 350 degrees would be too hot for the survival of most living things, this toasty temperature is 100 degrees below the ignition point of paper. For added protection, store cash and papers in tightly bound packets. That way, in the event that the heat of the fire or the duration of heat exposure exceed the safe's specs, only a few outer pieces of paper may be lost to the burn. Take your fire security seriously and start shopping today. This is a simple product that not only addresses your current vulnerabilities, but also protects your physical documents, cash, and digital data storage in the future. If the safe is heavy enough or secured to the floor, it will also protect your valuables from quicker "smash and grab" burglaries.

285 ADDRESS THE AFTERMATH

This book has no shortage of information on preparation. We've also provided you with a treasure trove of strategies to deal with various issues, emergencies, and mayhem as they unfold. We haven't finished the job, however, until we help you to plan how to recover afterward. In the wake of a minor emergency situation, getting "back to normal" may not take too long. With a little patience and some neighborhood cleanup, things can usually be restored to their former glory. Unfortunately, disasters don't limit themselves to minor localized events. In the aftermath of moderate and major levels of damage, including the loss of property and lives, there may be no return to the way things used to be. Major fires, floods, tornadoes, and other natural disasters can leave us scrambling for days, weeks, months to find a "new normal" in our lives.

It's easy to assume that our troubles are finished once the disaster is over. Sadly, this isn't always the case. For those who are lucky enough to survive a major disaster, the tough times may only be beginning as we fight to put the pieces of our lives back together. This goes deeper than just seeking shelter, water, and food within our community. If our home was lost, for example, we may have a long road to replace our vital documents and make insurance claims. This fight may go on for months and require a steadfast approach. After all, it's your life and you shouldn't take "no" for an answer if you're being brushed off by the insurance company (though it can be maddening to keep jumping through the hoops and trying to cut through the red tape). We should also expect major disasters to take a toll beyond the physical. Our mental and emotional health may be in worse shape than our property and possessions. Never be embarrassed or reluctant to seek therapy or counseling for yourself or loved ones after stressful or traumatic events. While some people appear to be coping in the aftermath of a disaster, they may still be suffering deeply. It's always possible that the worst damage from a crisis may remain unseen and internal.

286 SHOW YOUR SELF-SUFFICIENCY

We hope you've enjoyed our book, and more than that, we hope you can put these skills and information to work as you build a beautiful life of self-sufficiency. We also hope it's because you want to lead that life, not because you have to. As you look forward at your plans for the future, it's very important to look backward as well. Consider the path in life that you have already led, remembering your successes and failures with equal clarity—we learn from both, after all. You may even want to look further back, considering the lives of all those who went before us. Our ancestors were self-reliant because they had to be. This was the mindset that enabled them to survive. Today, you might find yourself in an emergency situation in which you have to survive by your own wits and resources. You might also find yourself fed up with your current lifestyle and hungering to be self-reliant without an emergency or disaster to face. In either setting, it's important to understand that you have more tools and information at your fingertips than humanity has ever enjoyed before. Combine these abundant resources with some tenacity, the independent spirit of our forebears, and a little bit of luck, and you've got the building blocks for a very rewarding life, even if times get tough. Never forget that you are descended from survivors. That's the foundation your mind and body are built upon. You've got this!

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ABOUT TIM MACWELCH

Tim MacWelch is the author of numerous books, including the *New York Times* bestsellers *The Prepare for Anything Survival Manual, The Hunting & Gathering Survival Manual,* and *How to Survive Anything*. He has been an active practitioner of survival and outdoor skills for over three decades. His love of the outdoors started at a young age, growing up on a farm in the rolling hills of Virginia, eating wild berries, fishing, and learning about the animals of the forest. Tim became interested in survival skills and woodcraft as an offshoot of backpacking as a teen—while out in remote areas, it seemed smart to learn some skills. The majority of his training over the years has involved testing survival skills and devising new ones, but the biggest leaps forward came from his experience as a teacher.

Tim's teaching experiences over the years have been rich and diverse, from spending hundreds of hours volunteering to founding his own year-round survival school in 1997. He has worked with Boy Scouts, youth groups, summer camps, and adults in all walks of life, as well as providing outdoor skills training for personnel in law enforcement, search and rescue organizations, all branches of the United States Armed Forces, the State Department, and the Department of Justice and some of its agencies. Tim and his wilderness school have been featured on CNN, *Good Morning America*, and several National Geographic programs, and in many publications including *Conde Nast Traveler*, the *Washington Post*, and *American Survival Guide*.

Since late 2010, Tim has written hundreds of pieces for *Outdoor Life* and many other publications. Tim's current and past articles and galleries can be found at outdoorlife.com.

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Dedication

To Laura, Daniel, Rachael, and Richard, I hope all your dreams of self-reliance come true.
Tim

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